REPORT

of the

SAN FRANCISCO WATER DEPARTMENT

FISCAL YEAR
1950-1951

G. W. PRACY
GENERAL MANAGER AND CHIEF ENGINEER

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BAY DIVISION PIPE LINE NO. 3
VENTURI METER HOUSE NEAR IRVINGTON PORTAL.

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SAN FRANCISCO WATER DEPARTMENT

G. W. PRACY
General Manager and Chief Engineer

The annual report of the San Francisco Water Department for the fiscal year 1950-51 records the twenty first year of successful operation under City ownership.

In each of these 21 years the Department has been self-supporting. From revenue it has taken care of operation, maintenance and repairs, all interest and redemption costs and has also financed main extensions and other capital improvements.

In this fiscal year the total local storage was higher than it has been in the past 10 years and the average daily consumption increased approximately three percent over the previous year.

Operation of a water department carries the responsibility of providing an adequate supply of pure, potable water to each consumer. In order to fulfill this responsibility it is necessary to plan for financing and construction of further developments to insure an adequate supply for the increasing population. This requires advance planning and cannot be done on a short time or hand to mouth basis.

This Department has planned its future expansion which is set up in a twelve year construction program. This program is a guide for the scheduling of major projects in the yearly "Capital Improvement Schedule" also known as our "Six Year Construction Program." These programs are adjusted from time to time to meet existing conditions such as lack of the funds necessary for their completion. Each time a scheduled project is postponed it brings the Department nearer the untenable position of not being able to provide an adequate supply of pure water.

An urgent need at this time is Balboa Reservoir. The area proposed to be served by this reservoir is now served by the 13.5 million gallon College Hill reservoir. The peakday consumption in this area for the fiscal year was 8.9 million gallons. The present storage would last for one and two-tenths days at that rate of consumption. This compares with a three and one-half days' storage capacity for the balance of the City upon completion of Sutro reservoir.

Start of construction of the Balboa reservoir was scheduled for this fiscal year, but since funds were not made available it is now imperative that authorization be given without further delay.

The annual report of this year follows the same general outline of previous years in order to give continuity of record and to provide ready reference comparison of operating results from year to year. Following this forward, a more detailed description is provided of the Department's operations during the year ending June 30, 1951, and this in turn is followed with an Appendix and a listing of Organization and Personnel.

Rainfall for the first time in nine years has been above normal with consequent increased runoff from watershed areas. Due to the increased runoff in local areas, the surface storage in local reservoirs was greater than at any time since April 1941, however, although the maximum quantity possible was drawn from Hetch Hetchy during the year, it was also necessary to draw heavily on reserve storage in Calaveras and peninsula reservoirs. Withdrawals reduced Calaveras reservoir storage to 3.8 billion gallons on November 17, 1950 and the peninsula reservoirs were reduced at that time to 18.0 billion gallons. Subsequent runoff partially replenished these reservoirs and it is probable that Calaveras storage will be at a low point of 20 billion gallons and that peninsula storage will be reduced 18 billion gallons by Christmas 1951, which date is normal time for start of runoff.

Water consumption for the entire system during the year ending June 30, 1951, averaged 105.8 million gallons daily, an increase of 3.1 million gallons daily over the preceding year. Of this total, 82.8 million gallons daily were used in the San Francisco consumption area and the balance of 23.0 million gallons daily was used in the suburban consumption area.

The peak 24 hour demand on the system, occurring on June 1, 1951, was 147.7 million gallons, as compared to the previous all time peak of 139.1 million gallons on June 29, 1950.

The low 24 hour demand on the system, occurring on December 25, 1950, was 77.3 million gallons as compared to a low of 71.8 million gallons on April 9, 1950.

The month of June, 1951 had the highest daily average demand of any month during the year averaging 126.1 million gallons per day as compared to an average 120.7 million gallons per day in June 1950.

Water sales for the year, including municipal non-pay accounts, amounted to $11,402,744, an increase of $627,800, or 5.8 per cent over the previous year. Accounts within the city limits increased by $274,542, making a total net sales within the City of $9,336,182, or 81.9 per cent of the department's total sales. Suburban net sales increased $353,258, making a total suburban sales of $2,066,562, or 18.1 per cent of the department's total net sales. Of this increase $228,340 was due to an increase in fourth block rates on February 1, 1951.

The number of active consumer accounts increased from 145,080 on June 30, 1950, to 147,081 on June 30, 1951, a gain of 2,001.

Accounts determined to be uncollectable totaled $3,119, an increase of $1,097 over the preceding year. This resulted primarily from the larger amounts on closing bills due to bi-monthly billing.

On June 30, 1951, the total number of water meters in service was 150,877, an increase of 2079 during the year. (Metering of the entire system was completed in 1918.)

Personnel employments amounted to a total of 548 on June 30, 1951, including 80 temporary employments.

During the year 34.0 acres of land were sold and 65.1 acres were purchased, making a net increase of 31.1 acres during the past year, and resulting in a total of 63,306.4 acres being held under the Department's jurisdiction, of which 35,501 acres are leased under 139 lease holdings.

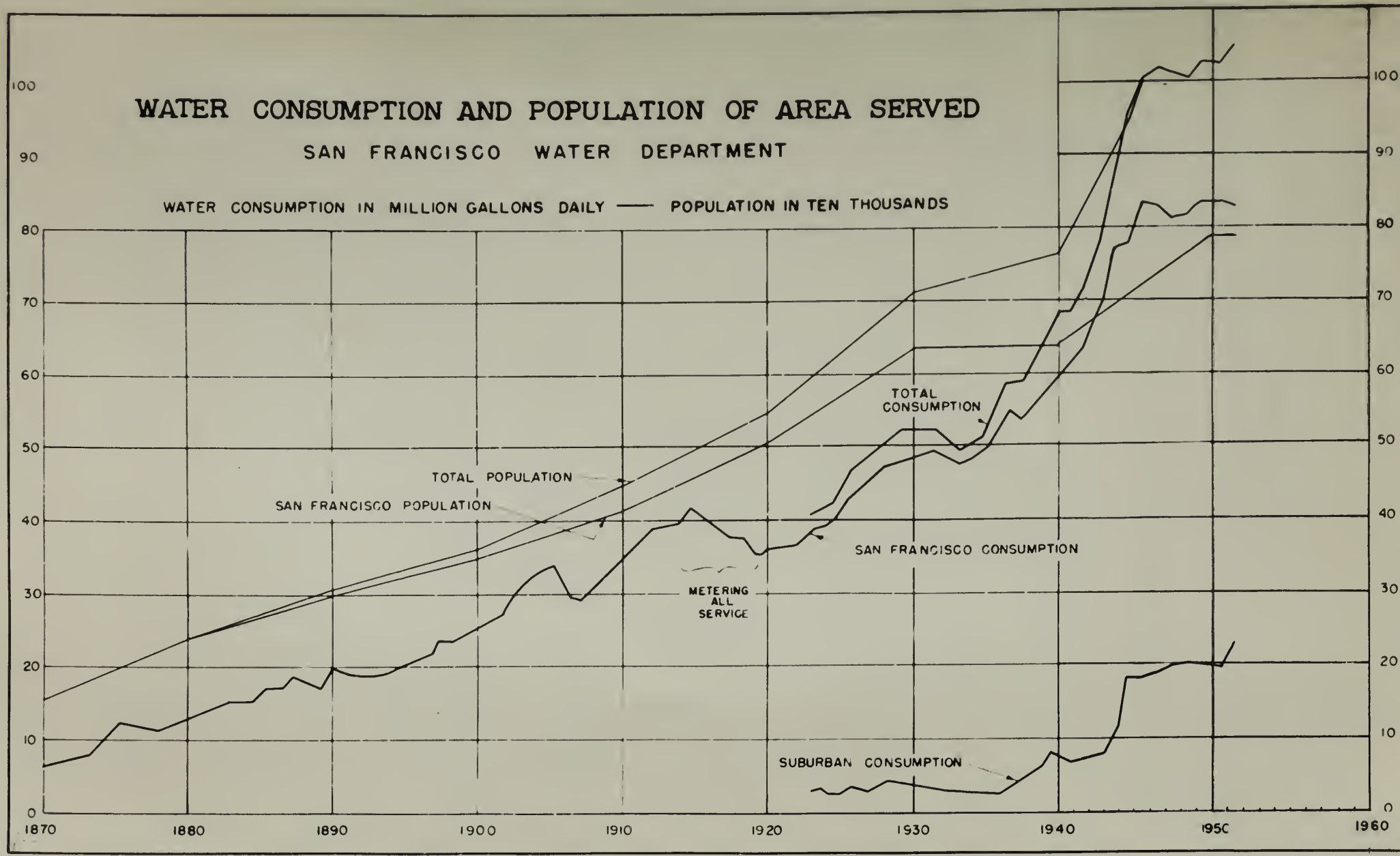
Chemical treatment of all water supplies has been continuous and all consumers received water that was in full compliance with State and Federal standards for potability.

During the fiscal year the department prepared 50 contracts for construction work and for furnishing of equipment, totaling in amount to over $3,200,000.

Two contracts for the construction of Bay Division Pipe Line No. 3 were awarded November 23, 1949, at an estimated total contract amount of $8,344,000. Completion of this work is scheduled for October 28, 1951. This pipe line is aligned to follow a dry-land route around the south end of San Francisco Bay, from Irvington Portal to the easterly portal of Pulgas Tunnel, a distance of about 34 miles. The pipe line will be 78" in diameter for the 8.5 miles from Irvington Portal to Milpitas and 72" in diameter for its remaining length of 25.25 miles. Capacity of this pipe line will be about 76 million gallons daily.

Contract for construction of concrete lining and roof at Sutro reservoir was awarded on December 18, 1950, for an estimated cost of $1,019,935. Scheduled completion date is November 10, 1951. Completion of this reservoir and connecting mains will ease the short reserve supply situation in the Stanford Heights district and, in a limited way, the area served by Sunset reservoir. It will also be possible to reduce the extremely high pressure in the Stanford Heights district and it will also make possible the improvement of the low pressure in the upper fringe of the Sunset district.

This foreward would not be complete without expressing a sincere appreciation to our personnel for their loyalty and cooperative efforts in maintaining and improving the efficiency of the department.


WATER CONSUMPTION AND POPULATION OF AREA SERVED
SAN FRANCISCO WATER DEPARTMENT
WATER CONSUMPTION IN MILLION GALLONS DAILY —— POPULATION IN TEN THOUSANDS
TOTAL CONSUMPTION
TOTAL POPULATION
SAN FRANCISCO POPULATION
SAN FRANCISCO CONSUMPTION
METERING ALL SERVICE
SUBURBAN CONSUMPTION
0
10
20
30
40
50
60
70
80
90
100
1870
1880
1890
1900
1910
1920
1930
1940
1950
1960

WATER PRODUCTION

GENERAL OPERATIONS:

The total amount of water used during the year, amounted to 38,751 million gallons. This water was supplied from the following sources:

Local Production	10,515 million gallons
Hetch Hetchy sources	28,236 million gallons
Total	38,751 million gallons

Delivery from Hetch Hetchy sources averaged 77.4 million gallons daily and maximum possible delivery was continued throughout the year excepting during necessary shutdowns.

Approximately 99.8 per cent of the Hetch Hetchy water delivery was brought across the bay, the remainder being diverted into the Alameda System. The total delivery from Hetch Hetchy since completion of the aqueduct on October 18, 1934, now amounts to 242,185 million gallons or an average of 39.7 million gallons daily.

The draft on water resources to meet consumption requirements for the year averaged 105.8 million gallons daily, an increase of 3.1 million gallons daily over the preceding year. Consumption in San Francisco consumption area was 82.8 million gallons per day and in suburban consumption areas was 23.0 million gallons per day.

The 24-hour peak consumption for the entire system was 147.7 million gallons, occurring on June 1, 1951, and the month of June 1951 had the highest daily average of any month during the year averaging 126.1 million gallons daily.

All water delivered to San Francisco was, as heretofore, supplied entirely from San Andres and Crystal Springs reservoirs in San Mateo County. These reservoirs were replenished from limited run-off, by water drawn from Calaveras Reservoir in Alameda and Santa Clara Counties and from the Hetch Hetchy system in the Sierra Nevada Mountains.

Water deliveries outside of San Francisco excepting approximately 47 adjacent square miles are here designated as suburban consumption. Practically all water deliveries outside the City of San Francisco are made to vendors who take large quantities at the department's transmission mains and distribute the water through their own distribution systems to individual consumers. The department's water is used by practically all cities and towns in San Mateo County and by the City of Palo Alto. The City of Hayward, Alameda County, started using the department's water on November 27, 1949 to

supplement their own supply. Distribution systems in these communities are owned by individual cities, public utilities companies, water districts or private individuals. Other relatively small deliveries are also made from the Department's transmission mains in the southerly area of Alameda County.

RAINFALL, CATCHMENT AND STORAGE:

Rainfall at the Calaveras reservoir was 125 per cent of normal, or 77 per cent higher than the previous year's rainfall. On July 1, 1950, Calaveras reservoir was at gauge height 79'-6¼" and receded to a low of 57'-2" on November 17, 1950. The seasonal rains raised the reservoir water level to a gauge height 144'-6¼" on May 21, 1951, the highest of the fiscal year. By June 30, 1951, the water level had lowered to 140'-9¼".

Rainfall on the peninsula water sheds was approximately 108 per cent of normal, or 25 per cent higher than the previous year. Crystal Springs reservoir on July 1, 1950, was at a gauge height of 91'-8" dropping to 76'-3" on October 16, 1950. The highest gauge reading, 116'-6½" occurred on April 18, 1951. On June 30, 1951 the water level was at gauge height 109'-0¼". Seasonal rainfall at the San Andres reservoir amounted to 35.33" or 94 per cent of normal. At the Pilarcitos reservoir, seasonal rainfall amounted to 54.11"or 119 per cent of normal. The Pilarcitos watershed area produced 2,116 million gallons during the past year.

The seasonal gain in storage, from a low of 21,882 million gallons on November 15, 1950, to a maximum of 58,300 million gallons on April 7, 1951, amounted to 36,418 million gallons. Surface storage in City, Peninsula and Calaveras reservoirs on June 30, 1951, was 54,235.6 million gallons as compared to 28,615.2 million gallons at the end of the preceding year.

Well No. O-1, in the Pleasanton Valley, was operated intermittently the full year to supply the Hearst Ranch with water.

TRANSMISSION:

Water consumption in the San Francisco area required delivery of a daily average of 82.8 million gallons into the City distribution system. Of this amount, an average of 34.7 million gallons daily was delivered through the 60 inch and 44 inch Crystal Springs pipe lines; 33.3 million gallons daily through the San Andres 54 inch pipe; 7.5 million gallons daily through the College Hill pipe and 7.3 million gallons daily through the Baden-Merced branch pipe line.

Suburban consumption, averaging 23.0 million gallons daily, was supplied directly from the several transmission and supply lines at various points in Alameda, Santa Clara and San Mateo Counties.

An average of 29.2 million gallons daily was pumped from Crystal Springs reservoir into the San Andres reservoir through the Crystal Springs aqueduct and to augment the San Andres Supply, an average of 6.5 million gallons daily was pumped by Alemany pumps into the higher levels of San Francisco.

The two bay crossing pipe lines carried an average of 94.2 million gallons daily across San Francisco Bay. Of this amount, an average of 83.8 million gallons daily was delivered into Crystal Springs reservoir and the remaining 10.4 million gallons per day was delivered to consumers in the lower peninsula area. Of the total amount of 94.2 million gallons per day, Hetch Hetchy supplied 77.2 million gallons daily and the Alameda sources, 17.0 million gallons daily.

RESERVOIRS:

On July 1, 1950, the storage in Calaveras reservoir was 7,980 million gallons or 25 per cent of its capacity. This storage dropped to 3,797 million gallons on November 17, 1950, then rose to a high of 30,205 million gallons on May 21, 1951. At the end of the fiscal year the storage was 28,529 million gallons, or 20,549 million gallons more than at the beginning of the fiscal year.

Storage in Crystal Springs reservoir dropped gradually from 11,574 million gallons on July 1, 1950 to 9,300 million gallons on October 15, 1950. The water storage increased to 20,030 million gallons on April 8, 1951, then dropped to 16,858 million gallons on June 30, 1951 or 75 per cent of the reservoir capacity.

San Andres reservoir storage was held between 4,812 million gallons on April 23, 1951, and 5,940 million gallons on March 9, 1951 during the year; amounting to 78 per cent and 96 percent respectively of the reservoir's capacity. This high level was maintained throughout the year by operating Alemany pumps and pumping from Crystal Springs reservoir.

On July 1, 1950,this storage in Pilarcitos reservoir was 757 million gallons. The minimum storage, occurring on November 14, 1950, was 566 million gallons. The maximum storage was 936 million gallons and was reached on March 7, 1951. Storage at the end of the fiscal year was 807 million gallons, or 80 per cent of the reservoir's capacity.

During the year Pilarcitos reservoir supplied 2,068 million gallons to San Andres reservoir.

PUMP OPERATIONS:

The pumps of Irvington pumping station were operated the first two months of the fiscal year and again from December through March.

This station pumped into the Bay Crossing pipe lines, during those two periods, a total of 1,066 million gallons of water supplied from Sunol filter galleries. No water was pumped from Pleasanton Wells into the Pleasanton pipe lines for conveyance to Sunol.

In order to maintain high water level in San Andres reservoir it was necessary to operate the Crystal Springs-San Andres pumps throughout the year, except for seventy one days during the rainy season, and again for twenty-five days when repairs were being made to the canal. A total of 10,669 million gallons was pumped from Crystal Springs to San Andres reservoir making a daily average pumpage of 29.2 million gallons.

Baden pumping station was not operated during the year but the operating units were maintained in a condition of readiness.

The Alemany pumping station was operated during the entire year on a one shift basis. A total of 2,363 million gallons was pumped from the University Mound reservoir into the College Hill and Sunset systems, which are normally supplied from San Andres reservoir.

PIPE LINES:

All water brought through the various transmission lines was treated with chlorine.

The Sunol pipe line from the Alameda Creek siphon to the town of Sunol, delivered a total of 596.7 million gallons of water during the year. Of this total, 575.0 million gallons were used for irrigation and the balance of 21.7 million gallons was used for the Sunol domestic supply.

From July 1, to August 31, 1950, and from December 6, 1950 to March 31, 1951, the Niles-Irvington pipe line was used to carry water gathered at Sunol filter galleries to the Irvington pumping station from where the water was boosted into the Bay Crossing lines. A total of 1,065.6 million gallons was pumped into the Bay Crossing pipe lines from the Niles-Irvington pipe lines.

On the west side of the bay the section of the Alameda transmission line, between Burlingame and San Carlos, continued to deliver Crystal Springs water to local consumers.

During the fiscal year the two Bay Crossing pipe lines carried a total of 34,375 million gallons across the bay, of which 30,573 million gallons were delivered through the Pulgas Temple to Crystal Springs reservoir.

The Palo Alto pipe line delivered a total of 1,808 million gallons to various consumers along the line south of Redwood City, for an average of 5.0 million gallons daily. The maximum weeks' demand on this line averaged 10.3 million gallons daily as compared to 9.6 million gallons daily for the maximum week's demand during the preceding year.

The two Crystal Springs pipe lines were in service throughout the year. The 44-inch line carried an average of 14.2 million gallons per day and the 60-inch line carried an average of 38.3 million gallons per day from the reservoir. Of this total of 52.5 million gallons daily, 28.3 million gallons daily were delivered to, and used in, the University Mound distribution system; 6.5 million gallons per day were delivered to University Mound reservoir, from where it was pumped through the Cross-Town pipe line to higher level distribution systems in San Francisco; 6.6 million gallons per day were diverted from the 60-inch Crystal Springs pipe into the Baden-Merced branch pipe line, through which it was delivered to Merced Manor reservoir and the balance of 11.1 million gallons daily was delivered to the distribution systems of the several peninsula communities, as far south as San Carlos.

The College Hill distribution district consumption averaged 8.9 million gallons per day. Of this amount 7.5 million gallons daily were delivered through the 30 inch College Hill pipe line and the balance of 1.4 million gallons per day came from Alemany pumps via the Cross Town pipe line. The 7.5 million gallons daily supply through the College Hill pipe line came from the San Andres reservoir via the 44-inch San Andres pipe line.

The Baden-Merced branch pipe line carried an average of 7.3 million gallons per day, 0.7 million gallons per day of which were supplied from San Andres reservoir via the two San Andres pipe lines and the balance of 6.6 million gallons per day was supplied from the 60 inch Crystal Springs pipe line. From August 16, 1950, to September 11, 1950, and for two other short periods, one in February and one in May, 1951, the Baden-Merced branch pipe received its water from San Andres reservoir and the balance of the year from Crystal Springs.

During the year the 54 inch San Andres pipe line carried a total of 12,169 million gallons of water, or an average of 33.3 million gallons per day, from San Andres reservoir to Sunset and the other high San Francisco pressure districts.

AQUEDUCTS:

The Sunol aqueduct carried water throughout the entire year from the Sunol filter galleries to Niles reservoir. From July 1, to August 31, 1950, and from December 6, 1950 to March 31, 1951, water was carried through the Niles-Irvington pipe line to Irvington pumping station, where it was then pumped into the Bay Crossing pipe lines for delivery to consumers on the west side of San Francisco Bay. During the balance of the year the Sunol aqueduct water was delivered to the Alameda County Water District.

The Crystal Springs aqueduct was in operation 9 months of the year, carrying a total of 10,669 million gallons of water to San Andres reservoir from Crystal Springs reservoir.

The Pilarcitos aqueduct to San Andres reservoir was in service during the entire fiscal year and carried an average of 5.7 million gallons daily to San Andres reservoir. This aqueduct has a capacity of 40 million gallons per day.

ALAMEDA DIVISION GENERAL:

Calaveras reservoir was given two copper sulphate treatments for algae control.

Aerator discharge pipes at Calaveras Dam were cleaned and painted.

Leaks on Bay Crossing Pipe Line No. 1, due to electrolytic action, were repaired.

Lead joints on the concrete pipe of Bay Crossing Pipe Line No. 2 were cleaned out and caulked.

Piling on Bay Crossing Pipe Lines No. 1 and No. 2 were repaired where damaged by limnoria.

Work done at Sunol included repairing of filtration dam, and burning off the area to dispose of driftwood left on recession of flood waters.

Well No. O-1 in the Pleasanton Valley was operated intermittently the full year to supply the Hearst Ranch with water because of the low ground water level in the valley and the City's obligation to supply water during periods of low water level. No water was pumped by the Department for export during the year.

The Alameda Diversion dam was sluiced out due to the heavy rains. Washouts on the road leading to this dam were repaired.

Roads were graded and gravelled surfaces repaired throughout the Division.

Fire guarding, fence repairing, brush cutting and general maintenance were carried on throughout the year.

PENINSULA DIVISION, GENERAL:

The Baden Pumping Station did not operate during the year, but was maintained ready for use upon short notice.

Booster pumps at Crystal Springs Pumping Station were not operated during the year as reservoir levels were of sufficient height so that lines from the lake were able to deliver the demand by gravity flow. San Andres pumps were closed down for ten weeks during the rainy season, and again for three and one-half weeks during repairs to the canal.

Crystal Springs, San Andres and Pilarcitos reservoir waters required no unusual treatment during the year. Three copper sulphate treatments for algae control were given to Lower Crystal Springs reservoir, and two treatments were given the Upper Crystal Springs reservoir. Two treatments were given to San Andres reservoir, and one to Pilarcitos reservoir.

Repairs were made to the San Andres keeper's cottage and the forebay structures were painted. The exterior of Sawyer Camp cottage was painted and access to the basement was improved.

The Kohler lighting plant at the Crystal Springs cottage was replaced by a feeder line from the Pacific Gas and Electric Company service.

The cottage at Upper Crystal Springs Dam was repaired.

The Pacific Gas and Electric Company's new 60 K.V. line was built from the south end of Crystal Springs watershed to within approximately one-half mile of the head of the lake.

Repairs were made in several locations to Pilarcitos side flume where broken by falling trees and where large leaks developed.

The Pilarcitos Keeper's cottage was repaired, the exterior painted and a rockretaining wall built nearby.

Miscellaneous small equipment was purchased for use in the garage and in field operation, in addition to this four trucks, one coupe and a twenty-four foot launch were replaced. The launch to be used for treating Upper Crystal Springs lake.

One-ton chlorine tanks are now trucked in, in larger quantities, from the Pittsburg plant instead from San Francisco as formerly, which necessitated enlarging the platform storage capacity in the Millbrae Yard.

Repairs were made to the General Maintenance Foreman's cottage.

Sewer pipe has been purchased to replace the old wrought iron line now in use in the Millbrae headquarters yard.

Roads and trails have been graded, buildings fireguarded and grass burned along the main fireguard at Pilarcitos except where it was too moist from fog.

Two large breaks occurred in San Andres Transmission Line No. 1; one near the Serbian Cemetery and the other in Holy Cross Cemetery. They were repaired with new eleven foot sections cut in and connected with lead bands. The pipe plate being too thin to weld.

No leaks occurred in San Andres Transmission Lines No. 2 or No. 3; the Crystal Springs Transmission Line No. 2; the Palo Alto Pipe Line; Stone Dam Aqueduct nor the Pilarcitos Aqueduct.

Crystal Springs Transmission Line No. 1 had one leak develope caused by failure of an old leak band releasing a leak plug in the siphon section across the Brisbane flat. Blow-off valves in this line were located and uncovered between Sierra Point and the County Line. These valves have not been used for several years and considerable time was spent in locating them.

The 30-inch double disc cross-over valve between the Bay Crossing pipe lines No. 1 and No. 2, west of Pulgas pumping station, cracked and was replaced with a 30-inch solid wedge valve. This required two complete shutdowns of these lines.

Electrolytic action was responsible for five leaks on the Bay Crossing pipe line No. 1. Repairs were made by plugging and welding on patches. Deep pits in the pipe plate were spot welded where the pipe was exposed for repairing leaks.

Since new levees have been built on property adjoining our Bay Crossing property at Ravenswood, the tides flood our area. Extreme high tides come up onto the bottom of the 60-inch pipe. The levee around the land near the Ravenswood pump station was repaired.

A Contractor punctured the Alameda Transmission line near 28th Avenue in San Mateo, a section of the pipe that had been cement lined. A 15-inch by 18-inch patch was welded over the hole, the lining was not repaired. A lead sleeve at 19th

Avenue started to leak and was caulked. These are the only leaks in that section of this line since it was cement lined about two and one-half years ago. In the preceding two and one-half years forty two leaks were repaired.

A ninety-three foot section of the Crystal Springs-San Andres Canal washed out and was replaced by metal flume. The bottom lining of this canal is getting very bad, and small leaks have developed. Several leaks occurred in the discharge line from pump No. 1 south of the old pump building.

Repairs were made to several leaks in the six-inch pipe line running from the Pilarcitos Aqueduct east through the golf course.

ALAMEDA COUNTY WATER DISTRICT:

During the year, a total of 2,900,694,000 gallons of water was released to the Alameda County Water District for replenishment to the underground gravel of the Niles Cone area. Under the terms of the 1920 award, 8,095,000 gallons were due the district during the year.

The quantities of water due the District and the quantities released by the Water Department to the District for replenishing the underground waters for each of the past four years are as follows:

	Due the District	Released to the District
1948	867,464,000	192,580,000
1949	761,137,000	None
1950	975,861,000	220,670,000
1951	8,095,000	2,900,694,000
Totals	2,612,557,000	3,313,944,000

PLEASANTON TOWNSHIP COUNTY WATER DISTRICT:

The Sheriff of Alameda County continued to use the U.S. Navy's Camp Shoemaker as a jail farm during the fiscal year. Water supplied to this institution, as well as to the former Naval housing project, Komandorski Village, was taken from the Navy's 4.105 acre tract within the Pleasanton Water District. Subsequent to January 1950, all diversions for this Camp Shoemaker consumption were made from the 4.105 acre tract on account of the leaky condition of the transmission line leading from the Navy's 100 acre tract. Except for artesian flow above ground surfaces, between 1940 and 1944, no water was taken from the Water Department's Pleasanton wells for export subsequent to 1939 until February, 1948. Between this latter date

and April 30, 1949, the Department took an average of 9.9 million gallons per day for export to San Francisco. Subsequent to April 30, 1949, San Francisco has taken no water from its Pleasanton source except for local use.

Withdrawals for the above enumerated purposes together with those for domestic and irrigation use within the District materially lowered the water table over a period of years throughout the entire Water District. Water level in Pilot well W-103X had a seasonal high point of 66 feet below ground surface in February 1948 and 70 feet in April 1951.

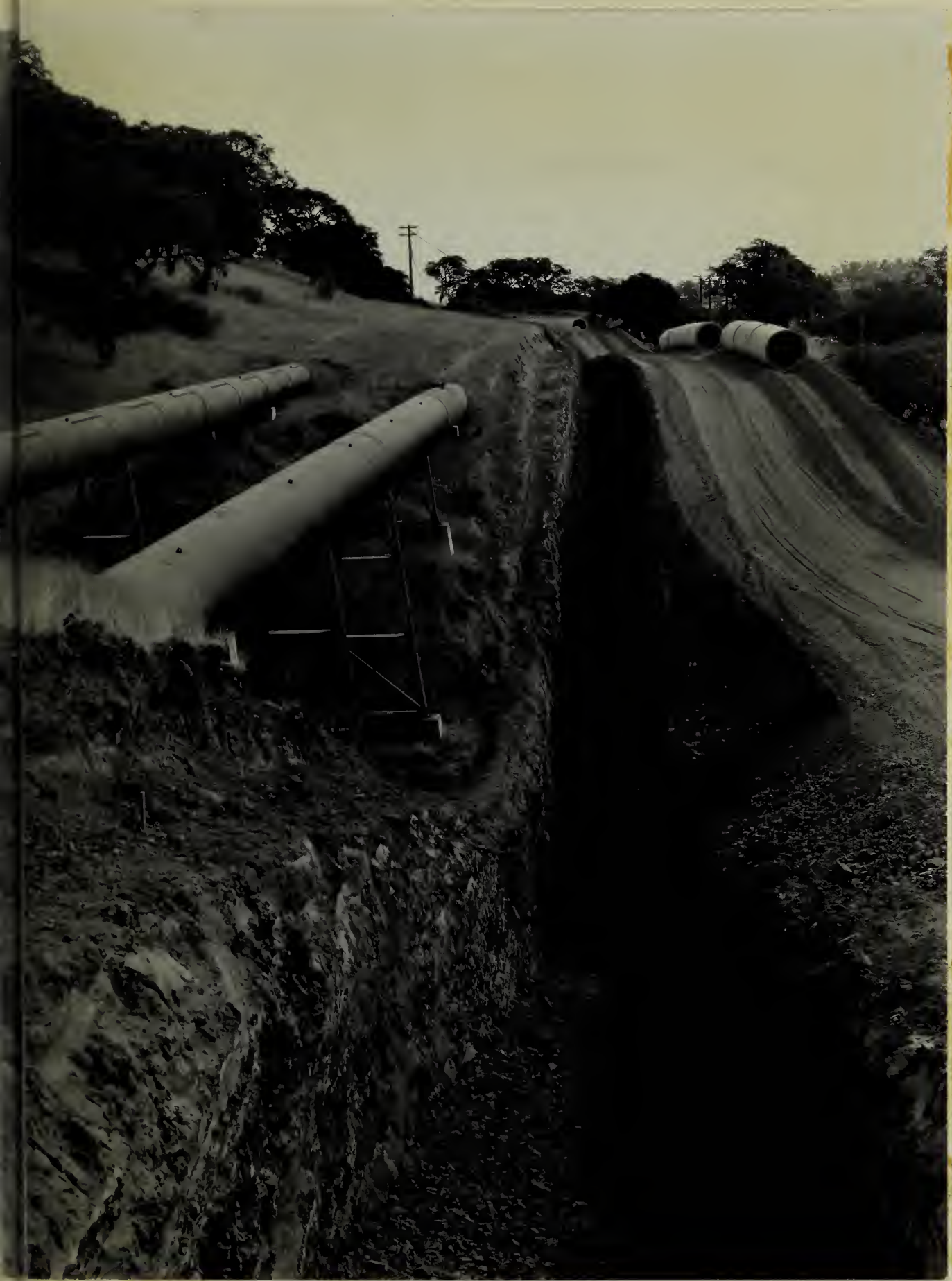
The town of Pleasanton continued, throughout the year, to obtain all its water supply from Water Department wells, located at Black Avenue and Santa Rita Road, and paid all resulting electric power bills which payments were later reimbursed by the Water Department except from November 13, 1950, to April 16, 1951, during which period Pleasanton's Pilot well was above the elevation where San Francisco is required to furnish the town of Pleasanton with water. Throughout the year, the Department also reimbursed the District for electric power charges for pumping "Community Wells" and paid power bills rendered to land owners, except as otherwise provided in the "Pleasanton Township County Water District Agreement." All of which was in conformity with the Department's obligations under the Pleasanton Water District agreement.

Runoff into the Department's local storage reservoirs, during the 1950-51 season, was of sufficient quantity that pumping from Pleasanton wells was not resumed. This served to retard recession of the water table, to defer, and it is hoped to eliminate the necessity of possible excessive expenditures in providing water supplies for land owners in conformity with the "Pleasanton Water District Agreement."

SUBURBAN METERS:

There were 31 new services installed during the year for suburban consumers. The total number of suburban meters at the close of the year was 1075 of which 1050 serviced 755 active consumers; a decrease of 46 active consumers for the year.

BAY DIVISION PIPE LINE NO. 3. GENERAL VIEW LOOKING NORTH FROM DURHAM ROAD.

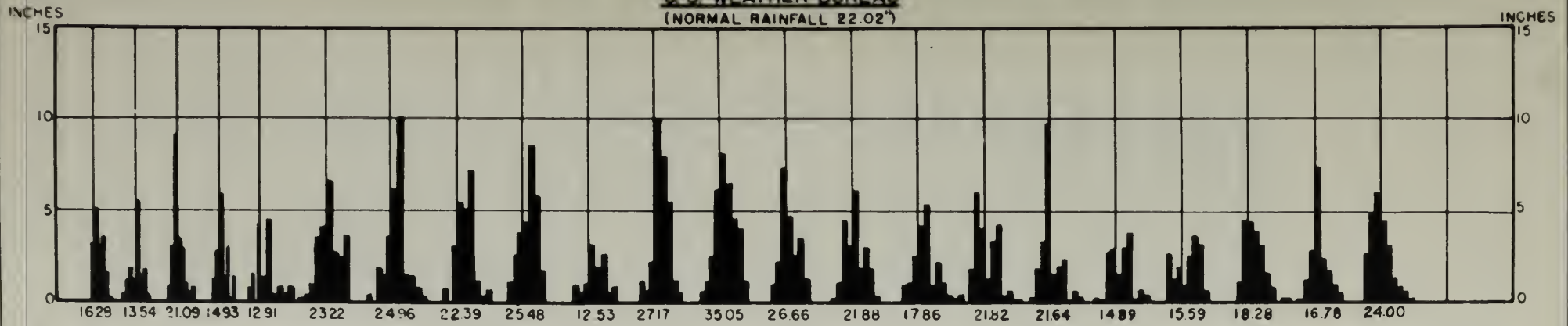


BAY DIVISION PIPE LINE NO. 3.
TRENCH VIEW SHOWING BAY CROSSING PIPE LINES NO.1 AND NO.2
NEAR PULGAS TUNNEL.

SAN FRANCISCO RAINFALL IN INCHES

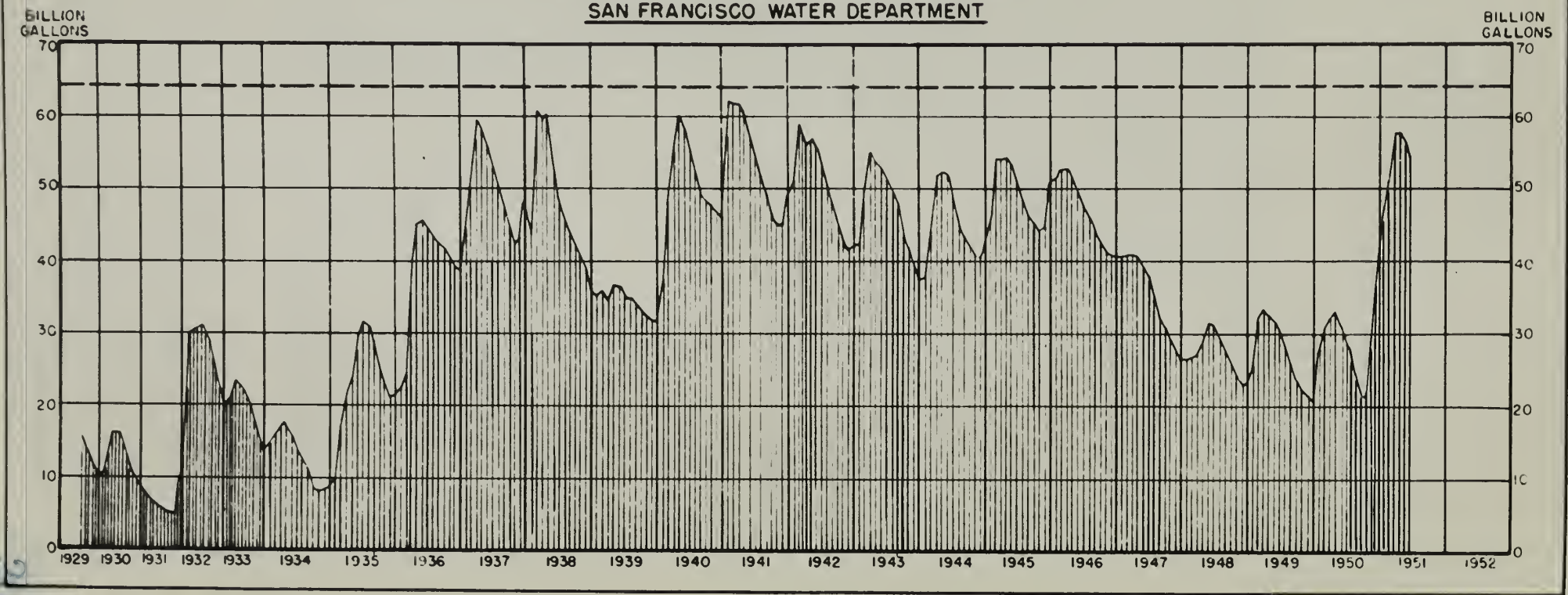
U.S. WEATHER BUREAU

(NORMAL RAINFALL 22.02")



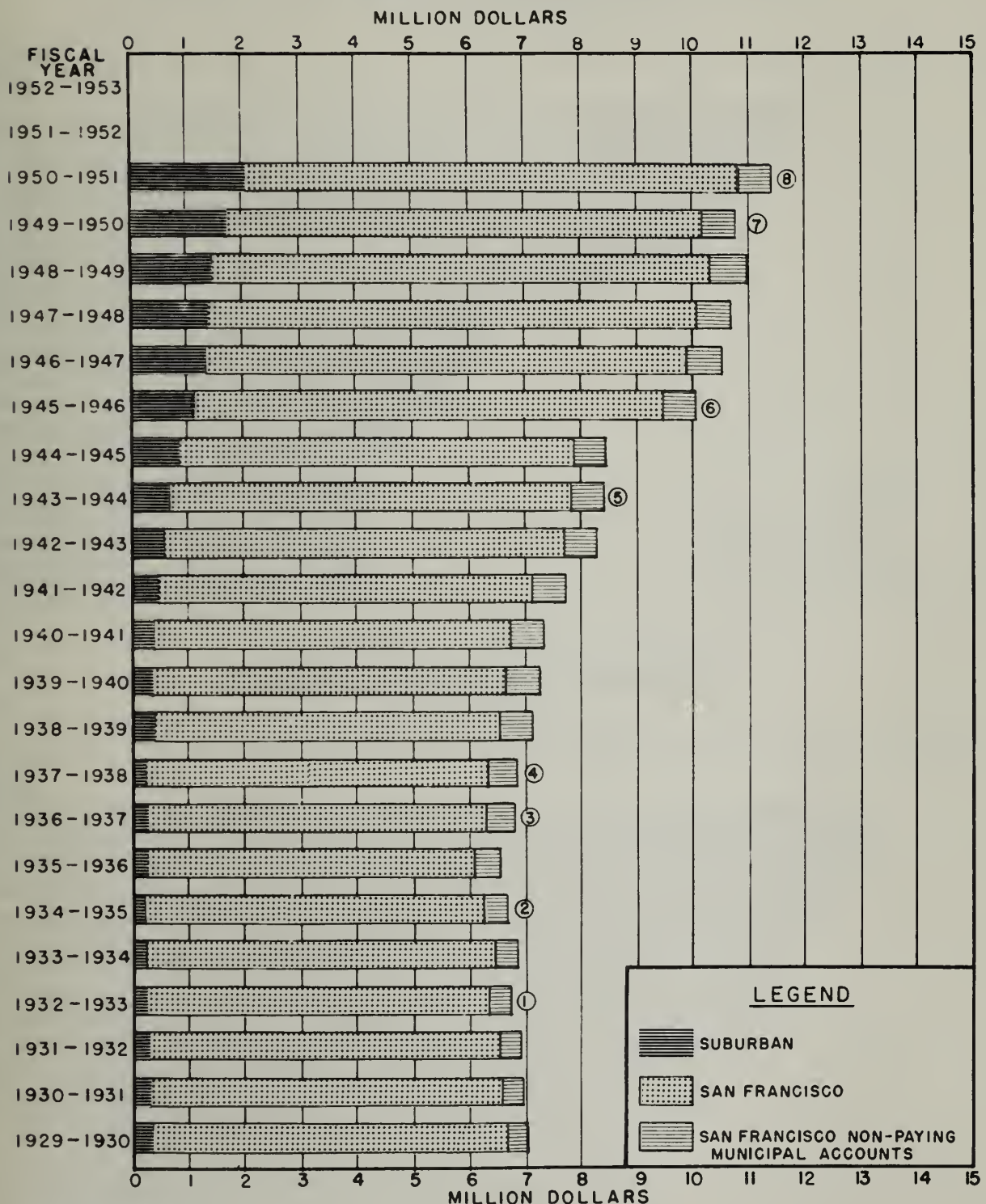
STORAGE IN BILLION GALLONS

SAN FRANCISCO WATER DEPARTMENT



SAN FRANCISCO WATER DEPARTMENT

WATER SALES

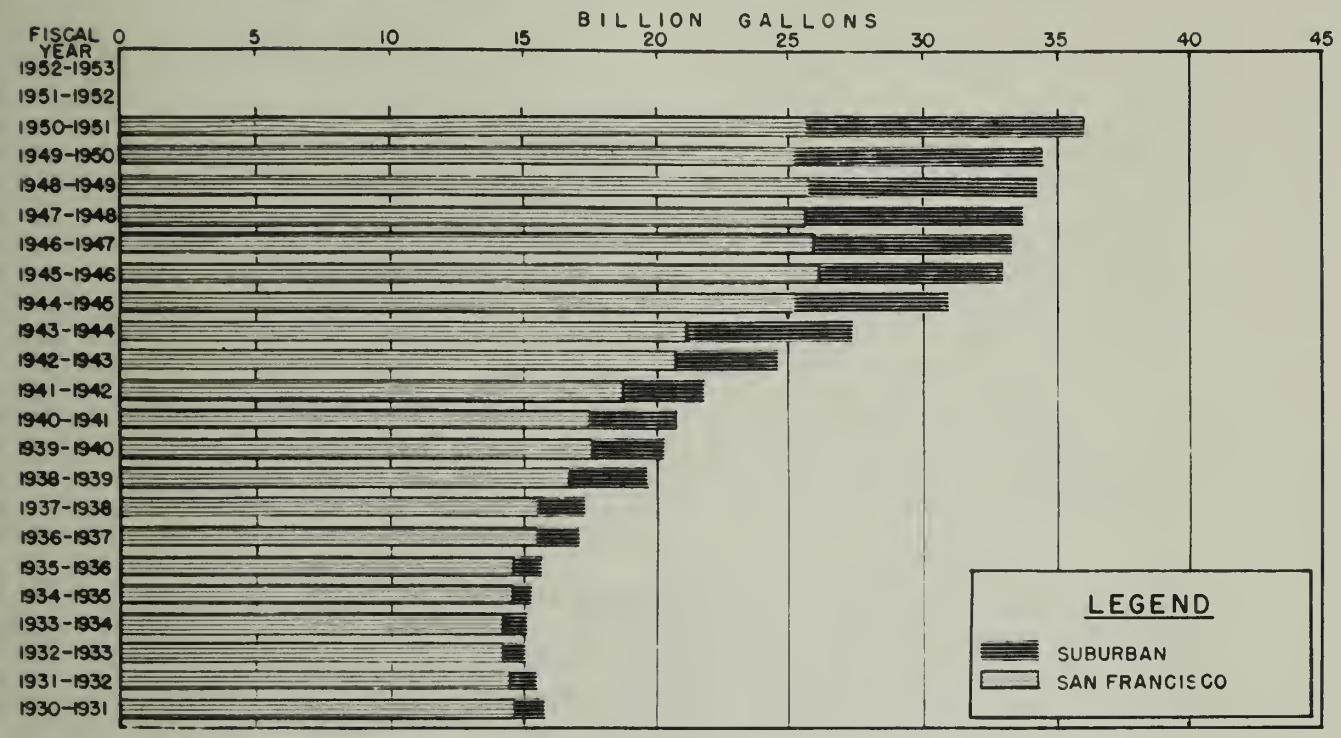


RATE CHANGES:—

① OCT. 26, 1932 75% REDUCTION ON FIRE SPRINKLER SERVICE CHARGES.
② DEC. 1, 1934 10% REDUCTION ON ALL RATES EXCEPT HYDRANTS AND SPRINKLERS.
③ JAN. 1, 1937 7% & 48% REDUCTION ON INCREASED USAGE AT INDUSTRIAL & WHOLESALE RATES.
④ JAN. 1, 1938 7% & 48% REDUCTION APPLIED TO ALL " " " " " "
⑤ DEC. 1, 1943 15% REDUCTION TO ALL CONSUMERS WITHIN CITY & COUNTY OF SAN FRANCISCO.
⑥ SEPT. 1, 1945 PRECEDING 15% REDUCTION REMOVED FOR CONSUMERS WITHIN CITY & COUNTY OF SAN FRANCISCO. 15% INCREASE FOR SUBURBAN CONSUMERS.
⑦ JULY 1, 1949 INCREASE OF HALF-CENT PER 100 CU. FT. :—SAN CARLOS & SAN MATEO.
⑧ FEB. 1, 1951 INCREASE FOR FOURTH BLOCK WATER TO 15 CENTS FOR CITY & 16 CENTS FOR SUBURBAN; 10% DISCOUNT ON FOURTH BLOCK IF WATER WERE NOT TAKEN FOR RESALE.

SAN FRANCISCO WATER DEPARTMENT

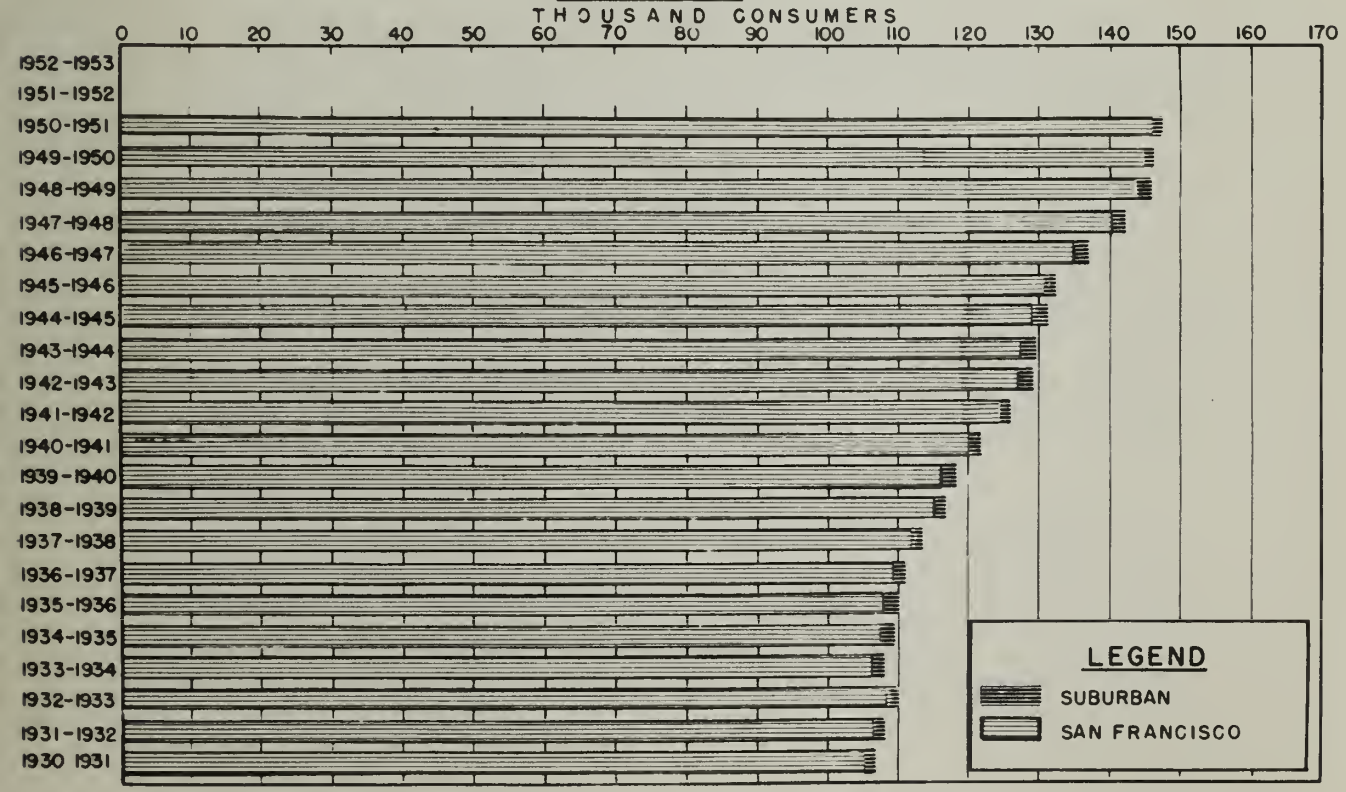
WATER DELIVERED AT CONSUMERS METERS



SAN FRANCISCO WATER DEPARTMENT

NUMBER OF ACTIVE CONSUMERS

AS OF JUNE 30



CITY DISTRIBUTION DIVISION

WATER CONSUMPTION:

The average daily consumption for the City and County consumption area was 82,799,879 gallons, a decrease of 320,337 gallons, or 0.4 per cent under the previous year. This was due in part to a rather large decrease in the residential Sunset Reservoir District which amounted to 2 671,354 gallons. The other residential districts show an increase in average daily consumption, except Forest Hill, which shows a slight decrease. The industrial district, i.e. University Mound, shows an increase in consumption. The percentages of change over the previous year for the various districts are as follows: Forest Hill decreased 8.6 percent; Stanford Heights increased 2.1 per cent; Sunset decreased 7.7 per cent;College Hill increased 11.2 per cent; University Mound increased 4.1 per cent and Merced Manor increased 10.1 per cent.

The maximum daily consumption for the City consumption area, during the year, occurred on June 12, 1951, and amounted to 104,945,000 gallons, while the day of minimum consumption for this area occurred on December 3, 1950, and amounted to 66,088,000 gallons.

OPERATING CONDITIONS:

Due to the fact that San Francisco experienced a rather cool year, there having been no hot weather for any length of time, there were no "no water" complaints due to the inadequacy of the system.

The construction of the concrete lining and roofing of Sutro Reservoir was begun on February 7th of this year and it is expected that it will be completed before the beginning of next year. Contracts are being prepared for the laying of the required steel feeder main, but due to government requirements some delay is anticipated in the actual construction. The 16" cast iron pipe required for the secondary feeder main for the Sutro District is on order, and delivery is expected sometime in the fall of this year.

With the completion of the Sutro Reservoir project it is hoped that the critical storage situation in the Stanford Heights Reservoir District will be relieved. The total load in the Sutro Reservoir District, however, may be greater than the available pumping capacity as now installed at Central Pumps, and therefore additional pumps may be required as the district is enlarged.

From past experience a hot spell of several days' duration would create a serious situation throughout the City. This condition can be overcome only by the construction of additional distribution reservoirs, pumping stations and the laying of additional feeder mains in the various distribution districts, and by the rearrangement of existing feeder mains.

Projects most urgently needed at this time, in addition to the completion of Sutro reservoir and its supply and distribution mains, include Mt. Davidson tank, Balboa reservoir and the eight hundred foot elevation reservoir with their supply pumps and connecting pipes and some 107,100 feet of new feeder mains in the following reservoir districts: Wilde Avenue 2,700 feet, Stanford Heights 11,000 feet, Sunset 62,400 feet, University Mound 12,500 feet and College Hill 18,500 feet.

CITY RESERVOIRS:

An inspection of the composition roofs over the various city reservoirs resulted in the finding that they are in a very poor condition. The reservoirs in question are Potrero Heights, Francisco, Stanford Heights and Clarendon Heights Tank. These roofs should be repaired in the coming fiscal year.

Plans are now being prepared for the development of the property north of Portola Drive and west of Twin Peaks Boulevard. Most of this property is at such elevation as to require the water supply to come from Forest Hill Tanks. Also with the development of Diamond Heights, i.e. the property south of Portola Drive and east of O'Shaughnessy Boulevard, much of the water supply will have to come from Forest Hill Tanks. The total storage of the Forest Hill Tanks is only 600,000 gallons at an elevation of 800 feet. It is therefore necessary that additional storage, together with an adequate pumping station be constructed in the very near future. The required reservoir site is located just south of Palo Alto Avenue and west of Twin Peaks, it being at an elevation of 800 feet, the reservoir to have a capacity of about 15.0 million gallons.

PUMPING STATIONS:

As in the previous fiscal year all pumping stations operated without any serious mishaps. Several of the smaller automatic stations experienced electrical troubles, the fuses in the principal incoming control switch burning out. These difficulties are due to a continuous overload in the station and fortunately were discovered in time to prevent a water shortage.

Additional pumps are on order for the Lane Street Pump Station, Forest Hill Pumps and the Lake Honda Pump Station. These new pumps will be installed as soon as received. The two small pumping units in the Bay Bridge Station have been removed and are now installed and operating in the Twin Peaks Pump Station, the triplex pump in that station being used as a standby.

CITY PIPE SYSTEM:

Several 12" cast iron feeder mains were laid during this fiscal year. One of these feeder mains was laid across Golden Gate Park, supplying Merced Manor Reservoir water to most of the area north of Fulton Street and east of the Great Highway, this area was formerly supplied from the Meyer Tank. Another of the feeder mains was laid in the Keith Street Tank District, assuring a better water supply in that district west of Third Street. The third 12" feeder main was laid in Clarendon Avenue, bringing Stanford Heights Reservoir water to Sutro Reservoir and will also be used for the distribution of water in the area north and west of Clarendon Avenue. A 12" main was laid in Visitacion Avenue east of Bayshore for the supplying of the properties of the Southern Pacific Company south of Visitacion Avenue and east of Bayshore under a special agreement with the Public Utilities Commission.

The normal routine extensions of 4", 6" and 8" mains were made during the fiscal year as shown in the attached Table No. 21.

SERVICES AND METERS:

There were 2287 domestic and 39 fire services installed during the fiscal year. A total of 3034 new meters was set, 3335 meters changed and 966 returned to the shop.

As in the previous year, old meters of many years' service, and where the cost of repair is excessive, are being retired.

With the completion of the remodeling and overhauling of the meter shop and testing laboratory, the output of the meter shop has been doubled without increasing the personnel. The accuracy of the repaired meter is now equal to that of new meters in most cases, and all meters installed have the desired degree of efficiency.

Perhaps the principal complaint from the consumers is one of "poor pressure". A careful inspection is made of these complaints and it is found that they are due to the service

being choked or the house piping being too small, or both. About 175 services have been ordered renewed in this fiscal year and about the same number of consumers have been advised by letter that their house piping requires enlarging.

An ordinance is now in the process of enactment which will regulate the size of the service, meter and house piping in advance of actual construction. With the enactment of such an ordinance "poor pressures" should be unknown in all remodeled or newly constructed buildings.

WATER SALES DIVISION

On February 1, 1951 an increase in rates, affecting only those consumers using in excess of 333,300 cubic feet per month, was put into effect. The new schedule provided for fourth block rates of 15 cents per hundred cubic feet in San Francisco and 16 cents per hundred cubic feet in the suburban area each subject, however, to a discount of ten percent if the water was not taken for resale. Additional revenue to June 30 resulting from this increase was $228,340. Of this total $58,739.00 was in San Francisco which includes $9,370.00 from Municipal non-paying accounts. The total increase in the Suburban area was $169,601.00. All of the San Francisco water was delivered at the discounted rate. Of the increased Suburban revenue, $165,975 was derived from consumers who resold our water.

As an added convenience to its consumers the Department, commencing with the month of April 1951, adopted the plan of providing pre-addressed return envelopes with all bills mailed out and with those left by the regular collectors. In the three months to June 30 the Department has provided its consumers with 186,452 such envelopes and has received a return of 55,830 envelopes or 30%. In the starting month of April however, the return was only 18%, due to the fact that many of the payments received in April were for bills issued prior to the inclusion of return envelopes, whereas the return in June was 37%.

During the year the work of rerouting the meter readers' field books and consequent renumbering of all our consumers' accounts, begun in the previous year, was completed at a total cost of $28,700. Altogether, some 140,000 bi-monthly accounts were involved. Of these, 88,000 were rerouted and renumbered at a unit cost of 25.15 cents per account. The remaining 52,000 accounts were renumbered only, at a unit cost of 12.59 cents per account.

Gross Water Sales amounted to $11,430,837 of which $9,363,760, including $603,910 to Municipal Departments in lieu of taxes, were in San Francisco and $2,067,077 were in the Suburban area. After deduction of $28,093 for allowances and refunds, Net Sales amounted to $11,402,744. This was an increase of $627,800 or 5.83% over Net Sales for the previous fiscal year. San Francisco Net Sales increased by $274,542 to $9,336,182. Suburban Net Sales were $2,066,562 an increase of $353,258.

Deliveries through consumers' meters totaled 4,813.8 million cubic feet of which 3,418.6 million cubic feet were recorded in San Francisco and 1,395.2 million cubic feet were recorded in the Suburban area.

Additional revenue during the year, provided by the extra half cent rate for service from the Alameda pipe line, was $16,706.00. The two year total, from July 1, 1949, now stands at $31,504.00. Palo Alto pipe line deliveries totaled 234,386,500 cubic feet, producing a revenue of $324,266.

During the year orders were taken requiring the installation of 2,401 new services or distributors for domestic use. Orders received for installation of automatic sprinkler services totaled 40. Our Builders and Contractors Section supplied water to and kept check on 2,721 construction or street work jobs initiated during the year.

Closing bills were issued on 21,016 accounts an increase of 1,902. During the year accounts determined to be uncollectible totaled $3,119. This was an increase of $1,097 over the previous year which resulted primarily from the larger amounts on closing bills due to bi-monthly billing. The Suspense balance, consisting of closing bills in process of collection, increased very slightly to $6,046 as of June 30, 1951.

Consumers' Accounts Receivable at June 30, 1951 amounted to $984,887, an increase of $68,902 over the previous June 30. The percentage of Accounts Receivable to Sales for the month of June was only 81.77% indicating the healthy condition of our collections. Collections for the year were $10,732,348, an increase of $678,601 over the previous year and a record to date.

WATER PURIFICATION DIVISION

Water treatment practices continued as usual throughout the year except that lime treatment of Hetch Hetchy water for anti-corrosion control purposes was started in late January. Disinfection of all supplies was continuous and all water supplied to consumers complied with the bacteriological standards established by the U. S. Public Health Service for drinking water purity.

Although source supplies vary from a soft mountain water to a relatively hard ground water supplying minor quantities, the final mixture supplied to consumers is moderately soft and of relatively low mineral content.

Laboratory

All analytical work in the fields of biology, bacteriology and chemistry except the necessary field tests, was performed in our laboratory located at Millbrae which operates under a certificate of approval issued by the Division of Laboratories, State Department of Public Health. Following is a tabulation which summarizes the field and laboratory tests made during the year in connection with water treatment, sanitary control and special investigations:

Bacteriological Examinations	6,504
Routine Microscopical Examinations of Algae	373
Other Miscellaneous Examinations	35
Electrical Conductivity Measurements	3,202
Complete Mineral Anaylses	7
Partial Chemical Analyses	920
Dissolved Oxygen Tests	580
Anaylses to Determine Origin of Leaks	236
Complaint Investigations	35
Turbidity Measurements	3,232
Miscellaneous Laboratory Tests Not Otherwise Included	493
Chlorine Residual Tests	3,800
Miscellaneous Field Tests	1,145

New equipment purchased during the year included a small scale, vacuum cleaner, and a pH Meter with adapter for electrometric titration.

Chlorination

Disinfection of all supplies was adequate and continuous throughout the year, with no water being exposed to contamination between the time of last chlorination and the consumer's service. Seven of our chlorination stations operated continuously with Tesla, Calaveras, Sunset and Francisco operating for 11.2 months, 5.7 months, 5.5 months

and 4.3 months respectively. The Irvington station which is only used under unusual circumstances was not operated at all during the year. All equipment was regularly inspected, overhauled or repaired when necessary, and maintained in proper working order at all times.

A total of 889,779 pounds of chlorine was used during the year, a 1.4% decrease as compared with last year's usage. Sixty two percent (62%) of the total was used at our Tesla station, 12.6% in the Alameda Division, 21.9% in the Peninsula Division and 3.5% in the City Distribution Division. The table included, lists the individual station and division totals for the year. Chlorine dosages averaged 19.1 pounds per million gallons at the Tesla station, 15.1 pounds per million gallons at the Calaveras Station, 8.0 pounds per million gallons at the Sunol Station and 5.7 pounds per million gallons at our Crystal Springs and San Andres stations. The high chlorine dosages at our Tesla and Alameda Division stations are necessary in order to maintain adequate chlorine residuals throughout the Coast Range tunnels and Bay Division lines to control organisms entering with tunnel infiltration waters.

A new semi-automatic hypochlorinator was purchased and installed at our Francisco Reservoir pumping station in order to control possible bird contamination and/or soil organisms of the coliform group entering through the dilapidated reservoir roof. Operation of the station began February 21.

Two new program adapters for feed control of chlorination equipment were built in the machine shop and one new adapter completely rehabilitated during the year for installation at our University Mound and Sunset Reservoir stations. The Sparling meter at College Hill Reservoir was replaced on an exchange basis, permitting better control of chlorine feed rates at this station.

Work on the construction of the replacement station at San Andres No. 1 is underway but had not reached the stage allowing installation of new equipment by the end of the year. The expansion of Tesla Chlorination Station facilities begun last fiscal year was completed early this fiscal year. Rearrangement of chlorination facilities at Crystal Springs station was in progress at the end of this year.

Two sets of safety equipment consisting of protective clothing and self-generating oxygen breathing apparatus were purchased this year, which will permit the staff to cope with any type of chlorine line break or tank leak.

A new truck with capacity to haul seven tons of chlorine per load was purchased and the policy initiated of hauling all chlorine used by the Department from the vendor's plant. Six 150 pound chlorine cylinders were obtained for use at points of very low chlorine consumption.

Corrosion Control

Construction of the lime treatment plant at Rock River Shaft on the Foothill Division tunnel was completed and operation began January 31. Equipment performance was most satisfactory from the beginning and no difficulties were encountered in initial operations. A total of 932,900 pounds of quicklime (CaO) was used during the remainder of the year with the average dosage being about 45 pounds per million gallons. This will maintain a pH of 9.1 throughout the aqueduct to Crystal Springs Reservoir when bringing in only Hetch Hetchy water. Although operating time has not been sufficient to note the effects on our transmission lines, reports from two consumer cities already indicate reduced flushing necessary in their systems to prevent red water complaints.

Algae Control

A total of 126,850 pounds of copper sulphate was required during the year for the control of algae activity in our local storage and impounding reservoirs. This is a 72% increase over last year's subnormal usage and a 29% increase over the past eight year average. The increase was doubtless partially due to increased storage during treatments and partially due to increased algae activity, probably stimulated by the flooding of some new areas, as Calaveras and Crystal Springs reservoirs were raised to high levels this year as the result of heavy run-off.

Calaveras was treated in July for ceratium, August for aphanizomenon and June for anabaena, volvox and ceratium, requiring a total of 52,800 pounds of copper sulphate. Upper Crystal Springs was treated in July for anabaena and June for aphanizomenon, requiring 19,500 pounds of copper sulphate with an additional 800 pounds being used to treat the water flowing from Upper Crystal Springs to Lower Crystal Springs, necessary because of a delay in treating the Upper reservoir. Lower Crystal Springs was treated in August for ceratium, staurastrum and anabaena, in March for anabaena and aphanizomenon and in May for aphanizomenon, requiring a total of 34,800 pounds of copper sulphate. San Andres Reservoir was treated in August for Synedra, ceratium and dictyosphaerium,and in March for Synedra, mougeotia and anabaena, requiring a total of 17,300 pounds of copper sulphate. Pilarcitos Reservoir was treated in April for the control of anabaena and [illegible]allomonas, requiring 1550 pounds of copper sulphate, and the small Stone Dam Reservoir was treated in July for dynobryon, and in April for anabaena, requiring 100 pounds of copper sulphate. The sum total of the water in storage in each reservoir at times of treatment was 96.2 billion gallons.

Cross Connections

The number of services to consumers having cross connections with other sources of supply on their premises which are protected from backflow by double check valve assemblies continues about the same, there being 104 in San Francisco and 54 in suburban areas. Personnel shortages prevented the regular inspection of all check valves this year although the spot checks made showed satisfactory operation. In addition there are some 385 of these check valve assemblies installed in service lines to fire or water service hydrants on the waterfront, to protect the system against possible salt water contamination, 209 of which were originally installed and are now maintained by the Water Department. As State and Federal health authorities require the installation and inspection of these back-flow protection assemblies in order that our supply be approved for certification, an attempt will be made to complete an inspection of all assemblies early next year providing the personnel can be made available.

Inspections

Inspections were made of the Bay Crossing Line No. 1, the Irvington Tunnel and the Coast Range Tunnel during the year to determine slime organism activity. The Coast Range tunnels were inspected August 1, 1950 which was the first inspection since June of 1946. Conditions were found to be excellent as there was the least amount of deposit on the walls ever noted during an inspection which is undoubtedly due to the increased chlorine residuals in the water carried through this tunnel during the past few years. Conditions in the Irvington tunnel and Bay Division lines showed improvement this year and very few complaints were received from aqueduct consumers on water quality.

Periodic sanitary inspections of watersheds on a somewhat reduced scale were made during the year for protective purposes. The annual inspection trip to Tuolumne Meadows in company with representatives from the U. S. Public Health Service and the Yosemite National Park was made in September, 1950 and sanitary conditions were found to be quite satisfactory, there being no evidence of sewage pollution of the headwaters of our supply. However, the continuing increase of visitors to this area is taxing present facilities to the limit and an expanded program is being initiated by the Park providing for higher dykes at the critical points in the leaching field and increasing the leaching capacity of the field. Actual work on this project began shortly after our inspection trip.

Water Quality and Complaints

The dissolved chemical content of the water served to consumers decreased about 8% as compared with water served last year although heavy run-off tended to increase turbidities. Calaveras Reservoir was out of service from November 18 until May 5 because of turbid water, the maximum recorded surface turbidity being 360 ppm.

All water served complied with the bacteriological standards of the U. S. Public Health Service and objectionable tastes and odors were absent. Harmful elements such as arsenic, lead and hexavalent chromium were either absent or present in trace amounts only and elements such as copper, iron, zinc, magnesium sulfate and chloride were well within accepted limits for drinking water. Iodine content was low but not entirely absent, boron was low and fluoride was present but not in concentrations high enough to be of value in the reduction of dental caries.

The hardness of the water served from the San Andres Reservoir ranged from 56 ppm to 72 ppm with an average of 62.5 ppm or 3.66 grains per gallon. The pH ranged from 7.5 to 8.2, with an average of 7.72; the alkalinity ranged from 50 ppm to 62 ppm, with an average of 56.5 ppm; the chlorides ranged from 11 ppm to 18 ppm with an average of 13.4 ppm; and the turbidities ranged from 1.0 ppm to 18 ppm with an average of 3.8 ppm. Water temperatures ranged from 49°F to 68°F, with an average of 59.7°F. The dissolved oxygen content ranged from 6.8 ppm to 12.5 ppm with an average of 8.9 ppm or about 89% of saturation.

The hardness of the water served from the Crystal Springs Reservoir ranged from 46 ppm to 64 ppm with an average of 55 ppm or 3.22 grains per gallon. The pH ranged from 7.3 to 7.9 with an average of 7.62. The alkalinity ranged from 45 ppm to 58 ppm with an average of 50.4 ppm; and the turbidity ranged from 0.5 ppm to 12 ppm (32 ppm for a few hours) with an average of 3.9 ppm. Water Temperatures ranged from 50°F to 70°F with an average of 59.8°. The dissolved oxygen content ranged from 7.2 ppm to 10.9 ppm with an average of 8.95 ppm or 89% of saturation.

The hardness of the water served from the Bay Crossing lines ranged from 12 ppm to 164 ppm with an average of 35.6 ppm or 2.08 grains per gallon. The pH ranged from 7.1 to 9.2 with an average of 8.03. The alkalinity ranged from 10 ppm to 154 ppm, with an average of 31.7 ppm; the chlorides ranged from 4 ppm to 17 ppm with an average of 5.6 ppm; and the turbidities ranged from 0.5 ppm to 9 ppm with an average of 2.3 ppm. Water temperatures ranged from 47°F to 70°F with an average of 55.9°F. The dissolved oxygen content ranged from 5.7 ppm to 12.7 ppm, with an average of 9.42 ppm or 90% of saturation.

Complaints of water quality continue to be sporadic and as usual the major portion are of dirty water. The increased run-off on the Peninsula this year was no doubt a contributing factor. Only a thorough flushing of the distribution system and the filtration of all water can eliminate the cause of this type of complaint. Immediate investigations were made of complaints of illness by consumers suspecting the water supply of being the causative agent. However in all cases tests showed the water to be bacteriologically safe. Complaints from industrial users were few and scattered and in general were of turbidity interfering with their processes.

Aid was given to some of our consumer cities with their water quality complaints in a few instances which is in line with our courtesy policy to these large consumers.

Fluoridation

Interest in fluoridation of the water supply as a measure for the partial control of dental caries increased greatly during the year which led to the preparation of estimates of the costs involved. The Board of Supervisors passed an ordinance providing for the treatment of a portion of the water supplied to San Francisco consumers. However, opposition to the program delayed implementation pending a decision of the people at the November election on fluoridation policy.

Charts and Tables

The charts included cover water quality, algae activity and monthly chlorine usage over a five year period. The tables included list complete mineral analyses of source and consumer supplies, annual chlorine usage at our various stations and summaries of results of bacteriological examinations.

ANNUAL REPORT DATA

OPERATION OF CHLORINATION STATIONS

Location		Total Operating Time (Months)	Chlorine Used (lbs.)	
Division	Station		Station Total	Division Total
Coast Range H.H.W.S.	Tesla	11.2	551,056	551,056
Alameda	Calaveras	5.7	80,049	
	Sunol Aq.	12	32,100	
	Irvington	0	0	112,149
Peninsula	Crystal Springs	12	109,128	
	San Andres #1	12	8,254	
	San Andres #2	12	69,514	
	San Andres #3	12	8,438	195,334
City Distribution	College Hill	12	7,352	
	Lombard	12	682	
	University Md.			
	Line #1	11.5	14,443	
	Line #2	12	7,069	
	Sunset	5.5	1,680	
	Francisco	4.3	14	31,240
			Total	889,779

SAN FRANCISCO WATER DEPARTMENT

TYPICAL ANALYSES OF WATERS SERVED TO CONSUMERS

(Results expressed in parts per million, except pH and conductivity)

SOURCE	CRYSTAL SPRINGS LINES	SAN ANDRES LINES	BAY CROSSING LINES	STONE DAM RESERVOIR
Conductivity ($K \times 10^5 ohm^{-1}$)	15.6	17.1	8.5	29.7
pH	7.7	7.7	7.3	7.7
Total Solids (calculated)	94	100	50	168
Silica (SiO_2)	6.5	8.5	3.0	8.0
Sodium (Na)	11.2	11.7	5.3	19.2
Calcium (Ca)	15.9	15.5	7.5	28.0
Magnesium (Mg)	4.2	5.8	3.4	10.2
Iron, Dissolved (Fe)	0.02	0.03	0.05	0.02
Aluminum (Al)	0.01	0.01	0	0.01
Manganese (Mn)	0	0	0	0
Boron (B)	0.12	0.14	0.12	0.15
Fluoride (F)	0.05	0.05	0.05	0.04
Carbonate (CO_3)	0	0	0	0
Bicarbonate (HCO_3)	65	70	34	120
Sulphate (SO_4)	15.1	12.6	8.7	14.3
Chlorides (Cl)	9	12	5	29
Nitrate (NO_3)	0.05	0.05	0.04	0.05
Hardness, Calculated ($CaCO_3$)	57	63	33	112
Alkalinity ($CaCO_3$)	53	57	28	98

Column 1 supplies downtown, commercial, waterfront areas of the City, and Peninsula communities as far south as San Carlos.
Column 2 supplies residential areas of the City.
Column 3 supplies peninsula communities (south of San Carlos) and some communities in Alameda County.
Column 4 supplies Coast County Water District.

SAN FRANCISCO WATER DEPARTMENT

MINERAL ANALYSES - SOURCE SUPPLIES

(Results expressed in parts per million, except pH and conductivity)

SOURCE	Hetch Hetchy at Alameda E. Portal	Calaveras Reservoir	Pleasanton Wells	Sunol Filters	Pilarcitos Reservoir
Conductivity ($K \times 10^5 ohm^{-1}$)	6.30	22.5	54.8	48.7	15.7
pH	9.1	7.7	7.9	7.9	7.8
Total Solids (Calculated)	36	128	321	291	96
Silica (SiO_2)	3.0	7.0	15.0	6.8	6.5
Sodium (Na)	4.1	8.8	30.1	28.4	12.0
Calcium (Ca)	6.4	25.2	51.4	53.6	12.8
Magnesium (Mg)	1.5	8.8	25.4	18.9	5.5
Iron, Dissolved (Fe)	0.04	0.02	0.03	0.02	0.01
Aluminum (Al)	0.06	0.3	0.03	0.01	0.01
Manganese (Mn)	0	0	0	0	0
Boron (B)	0.15	0.15	0.18	0.20	0.08
Fluoride (F)	0.06	0.10	0.05	0.06	0.06
Carbonate (CO_3)	2	0	0	0	0
Bicarbonate (HCO_3)	23	105	269	234	65
Sulphate (SO_4)	2.8	17.2	29.5	49.0	10.5
Chloride (Cl)	5	7	28	18	17
Nitrate (NO_3)	0.03	0.20	0.50	0.03	0.05
Hardness, Calculated ($CaCO_3$)	22	99	233	212	55
Alkalinity ($CaCO_3$)	21	86	220	192	53

Exact analyses of run-off into Crystal Springs and San Andres reservoirs cannot be made as water from all sources in use mixes in these reservoirs.

MONTHLY SUMMARIES OF BACTERIOLOGICAL ANALYSES

SAMPLES COLLECTED FROM THE SAN FRANCISCO DISTRIBUTION SYSTEM

IN ACCORDANCE WITH CERTIFICATION REQUIREMENTS

Month	Number of Samples	Coliform Test - 10 ml Portions			Samples Positive (3 or More Tubes)	
		Number of Tubes	Tubes Positive	Per Cent Positive	Number Positive	Per Cent Positive
1950						
July	346	1730	12	0.69	0	0
August	348	1740	10	0.57	1	0.28
September	306	1530	3	0.20	0	0
October	336	1680	25	1.50	0	0
November	329	1645	20	1.21	1	0.30
December	310	1550	17	1.10	2	0.65
1951						
January	347	1735	16	0.92	1	0.28
February	312	1560	22	1.41	2	0.64
March	351	1755	7	0.39	0	0
April	345	1725	3	0.17	0	0
May	351	1755	16	0.91	0	0
June	321	1605	15	0.93	2	0.63

BACTERIOLOGICAL ANALYSES

ANNUAL SUMMARY OF RESULTS

RAW WATERS - SOURCES AND RESERVOIRS*

Origin of Sample	Agar Count No. per ml			Coliform Group 10 ml Portions			Samples		
	Min.	Max.	Av.	No. Exam.	No. Pos.	% Pos. Yr.	No. Exam.	No. Pos.	% Pos. Yr.
Moccasin Reservoir	1	5000	1320	265	125	47	53	22	42
Tesla	1	5000	680	250	45	18	50	8	16
Calaveras Reservoir	1	1200	20	265	127	48	53	24	45
Sunol Filters	1	180	9	260	62	24	52	11	21
Pleasanton Wells	1	450	23	245	47	19	49	8	16
Upper Crystal Springs Res.	1	1000	43	250	74	30	50	13	26
Lower Crystal Springs Res.	1	280	21	260	82	32	52	17	33
San Andres Reservoir	1	58	8	260	103	40	52	20	39
Pilarcitos Reservoir	1	37	4	260	85	32	52	14	27
Stone Dam Reservoir	1	2000	48	260	159	61	52	32	61
College Hill Reservoir	1	250	23	520	198	38	104	34	33
Lombard Reservoir	1	120	7	520	80	15	104	11	11
University Mound Res. #1	1	60	5	525	182	35	105	30	29
University Mound Res. #2	1	30	4	525	107	21	105	20	19
Sunset Reservoir	1	160	6	520	57	11	104	11	11
Francisco Reservoir	1	140	19	515	48	9	103	4	39
Lake Honda Reservoir**	1	37	6	120	36	30	24	4	17
Lake Merced Reservoir***	1	800	170	240	200	83	48	41	85
				M. P. N.					
				Min.	Max.	Av.			
Alameda Creek	1	5000	420	15	24000	1730	26	26	100
San Antone Creek	1	750	60	96	24000	5400	22	22	100

* Includes all distribution reservoirs with chlorination facilities operating at the outlet.

** Standby purpose only.

*** Future Emergency standby source.

M.P.N. - Most Probable Number per 100 ml.

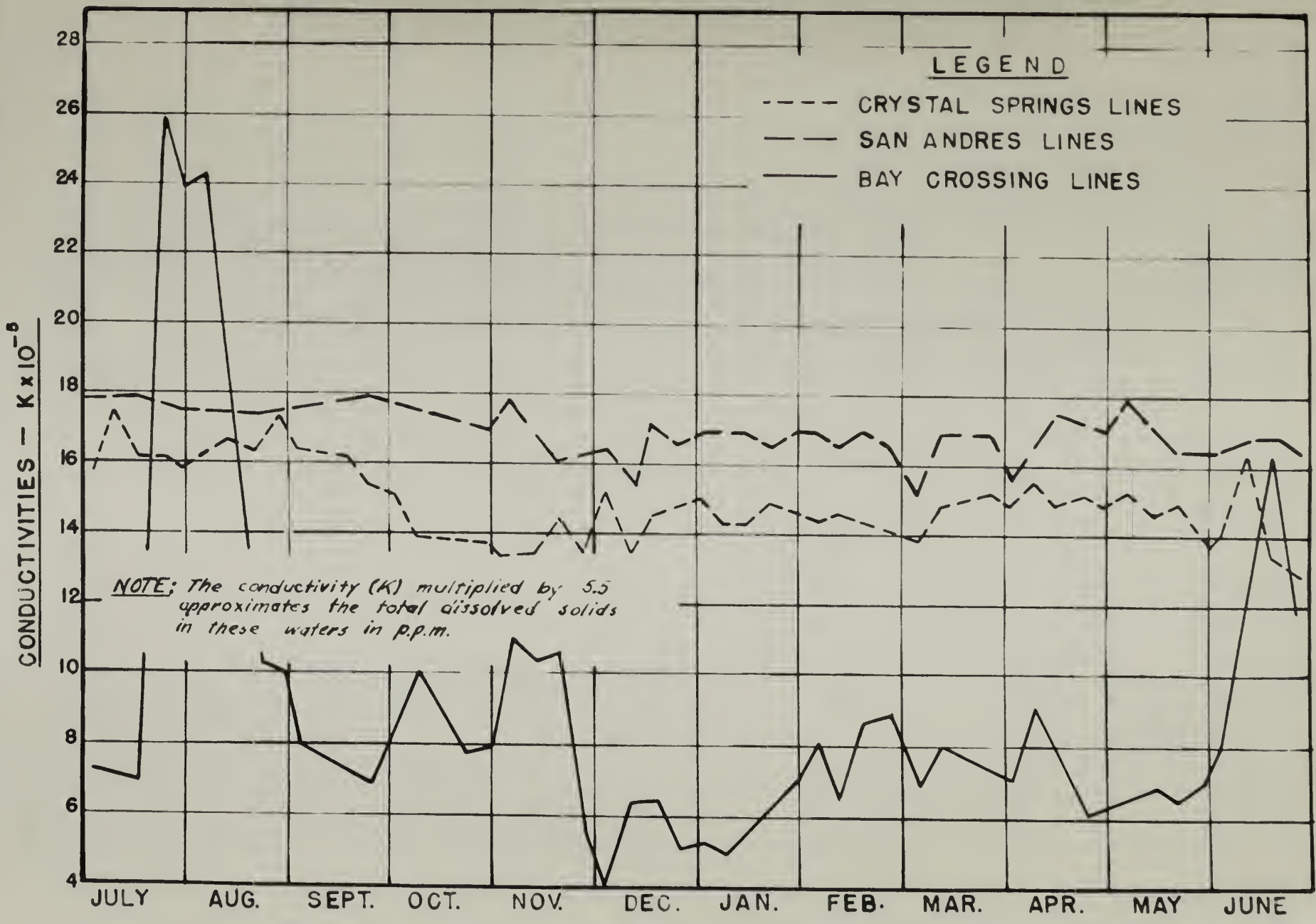
BACTERIOLOGICAL ANALYSES

ANNUAL SUMMARY OF RESULTS

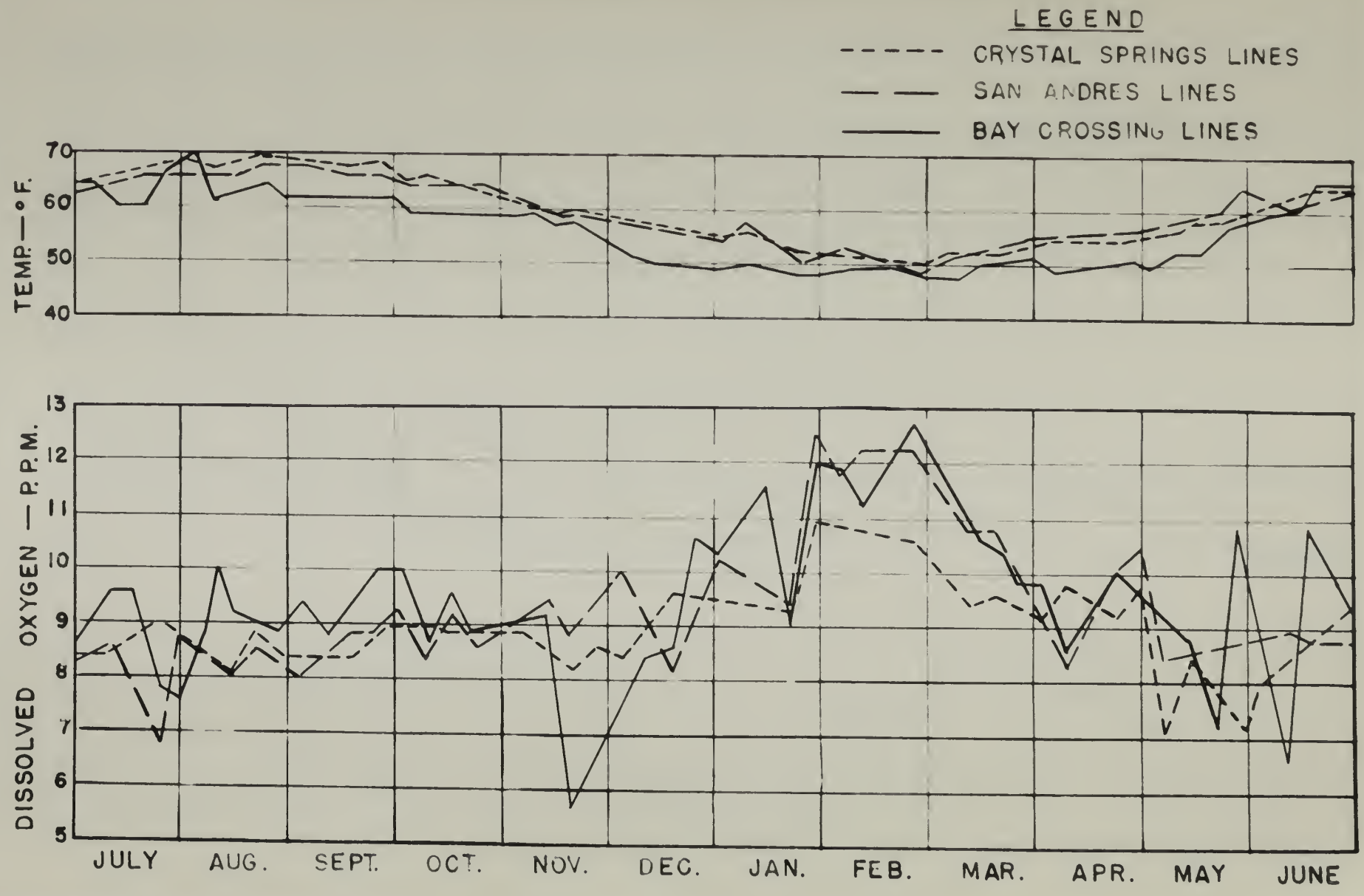
TREATED WATERS

Origin of Sample	Agar Count No. per ml			Coliform Group 10 ml Portions			Samples		
	Min.	Max.	Av.	No. Exam.	No. Pos.	% Pos. Yr.	No. Exam.	No. Pos.	% Pos. Yr.
Alameda E. Portal	1	200	5	260	1	0.38	52	0	0
Calaveras Pipe Line	1	400	21	130	0	0	26	0	0
Sunol	1	1000	15	520	2	0.38	104	0	0
Sunol Aqueduct	1	12	2	260	0	0	52	0	0
Irvington Pump Station	1	5	2	120	0	0	24	0	0
Bay Crossing Lines	1	100	3	1300	3	0.23	260	0	0
Palo Alto Pipe Line	1	400	6	785	3	0.38	157	0	0
Crystal Springs Line #1	1	500	8	1565	5	0.32	313	1	0.32
Crystal Springs Line #2	1	80	2	1565	2	0.13	313	0	0
San Andres Line #1	1	45	2	1565	3	0.19	313	0	0
San Andres Line #2	1	9	2	1565	1	0.06	313	0	0
San Andres Line #3	1	100	3	520	1	0.19	104	0	0
Ala. Line, Belmont	1	200	14	520	2	0.38	104	0	0
S.F. Airport	1	200	4	520	4	0.77	104	0	0
Univ. Md. Inlet #1	1	100	3	500	0	0	100	0	0
Univ. Md. Inlet #2	1	200	4	525	1	0.19	105	0	0
Univ. Md. Outlet #1	1	25	2	525	0	0	105	0	0
Univ. Md. Outlet #2	1	150	5	525	0	0	105	0	0
Univ. Md. System #1	1	3200	120	525	2	0.38	105	0	0
Univ. Md. System #2	1	300	20	525	12	2.3	105	0	0
Univ. Md. System #3	1	300	23	525	11	2.1	105	1	0.95
Univ. Md. System #4	1	250	17	525	6	1.5	105	0	0
Univ. Md. System #5	1	1500	64	515	5	0.97	105	0	0
Univ. Md. System #6	1	400	32	515	13	2.5	103	1	0.97
College Hill Inlet	1	280	6	345	4	1.2	69	0	0
College Hill Outlet	1	12	2	475	0	0	95	0	0
College Hill System #1	1	2100	30	520	5	0.95	104	0	0
College Hill System #2	1	200	2	520	5	0.95	104	1	0.95
Sunset Trans. System	1	300	11	520	2	0.38	104	0	0
Sunset Inlet	1	500	10	520	2	0.38	104	0	0
Sunset Outlet	1	300	5	470	7	1.5	94	0	0
Sunset System #1	1	80	4	525	8	1.5	105	1	0.95
Sunset System #2	1	23	2	520	2	0.38	104	0	0
Merced Manor Reservoir	1	100	11	520	5	0.95	104	0	0
Merced Manor System	1	30	2	520	5	0.95	104	0	0
Stanford Heights Res.	1	40	5	520	25	4.8	104	2	1.9
Stanford Heights Sys. #1	1	200	10	520	9	1.7	104	1	0.95
Stanford Heights Sys. #2	1	35	11	520	4	0.75	104	0	0
Lombard System	1	25	2	520	8	1.5	104	1	0.95
Forest Hill Pump Inlet	1	80	3	520	14	2.7	104	0	0

ELECTRICAL CONDUCTIVITIES OF WATER DELIVERED TO CONSUMERS
1950-1951

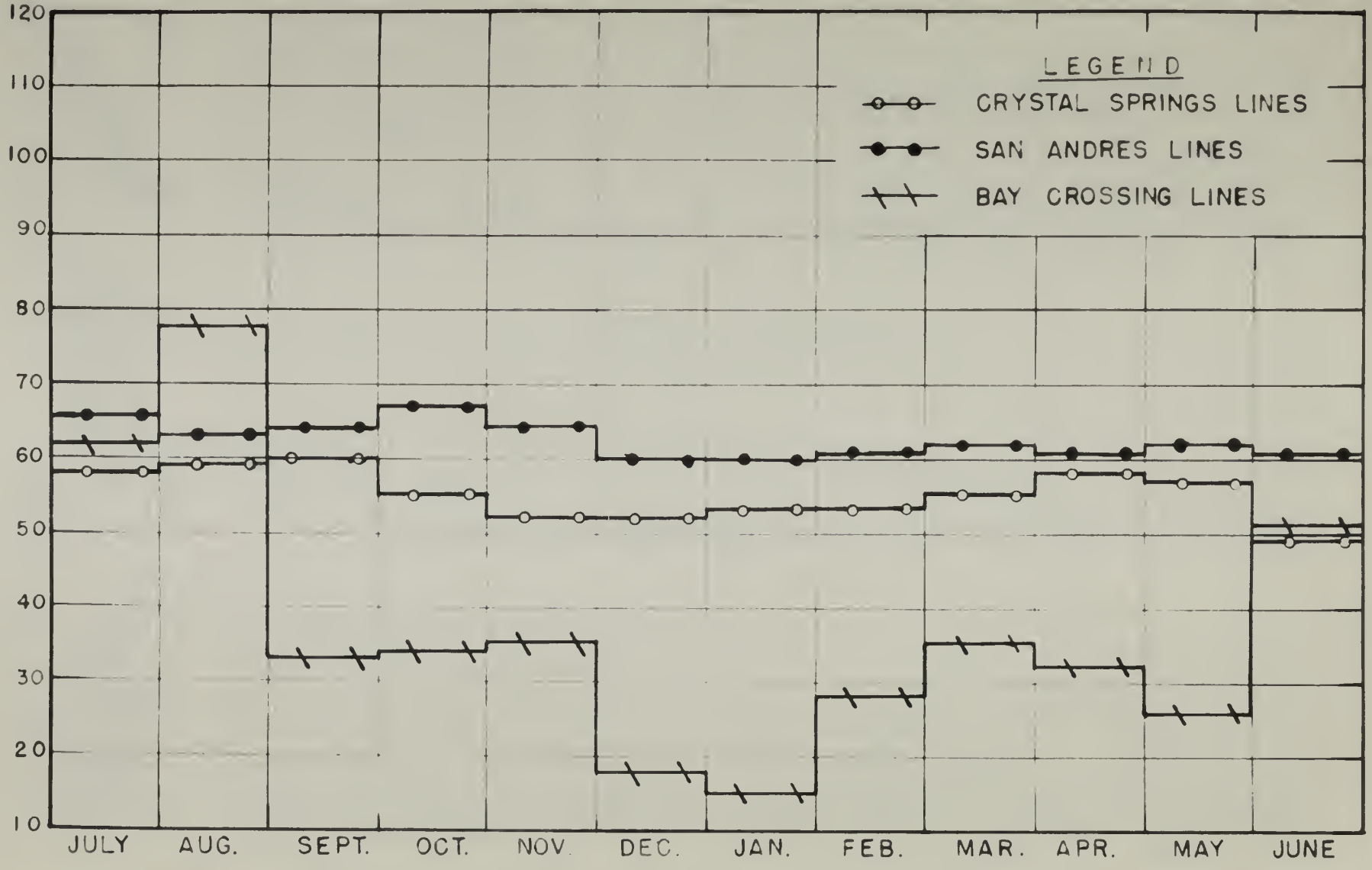


TEMPERATURE AND DISSOLVED OXYGEN OF WATER DELIVERED TO CONSUMERS 1950—1951



HARDNESS OF WATER
DELIVERED TO CONSUMERS 1950–1951

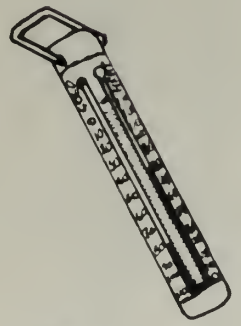
(MONTHLY AVERAGES—PARTS PER MILLION AS $CaCO_3$)

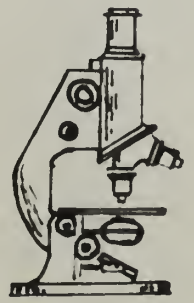


PENINSULA RESERVOIRS

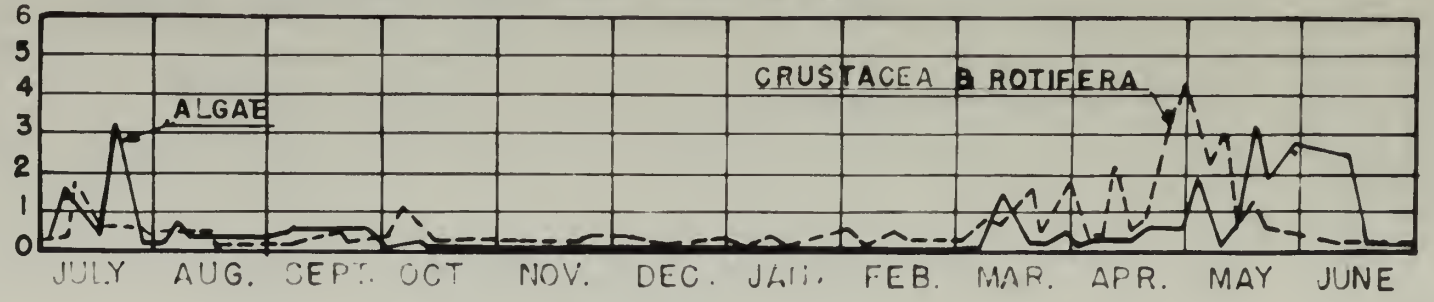
MICROSCOPICAL ORGANISMS — C.C. PER CU. METER

1950—1951

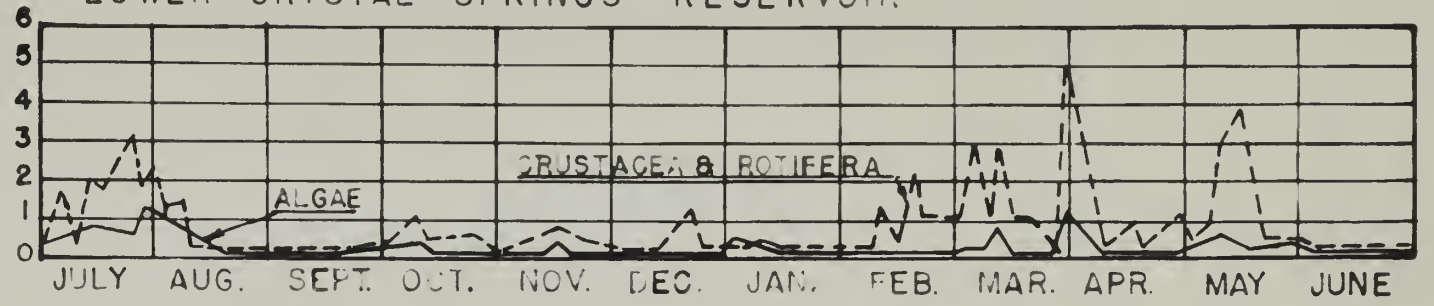




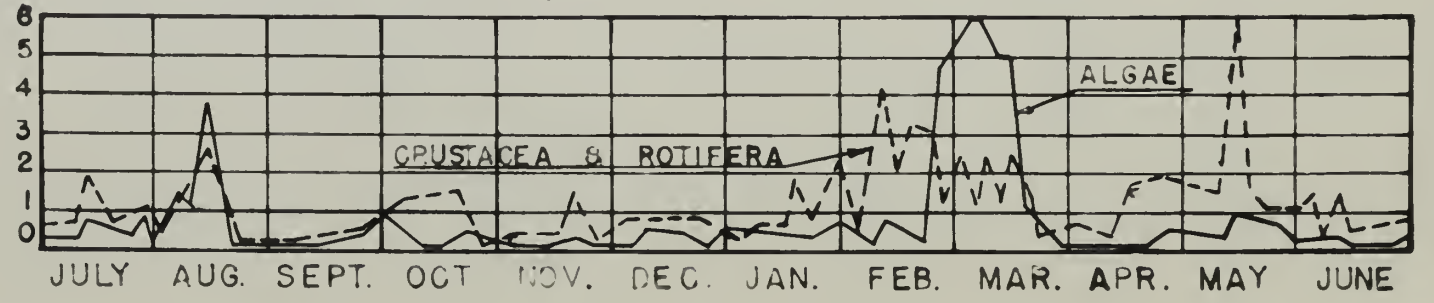
UPPER CRYSTAL SPRINGS RESERVOIR



LOWER CRYSTAL SPRINGS RESERVOIR

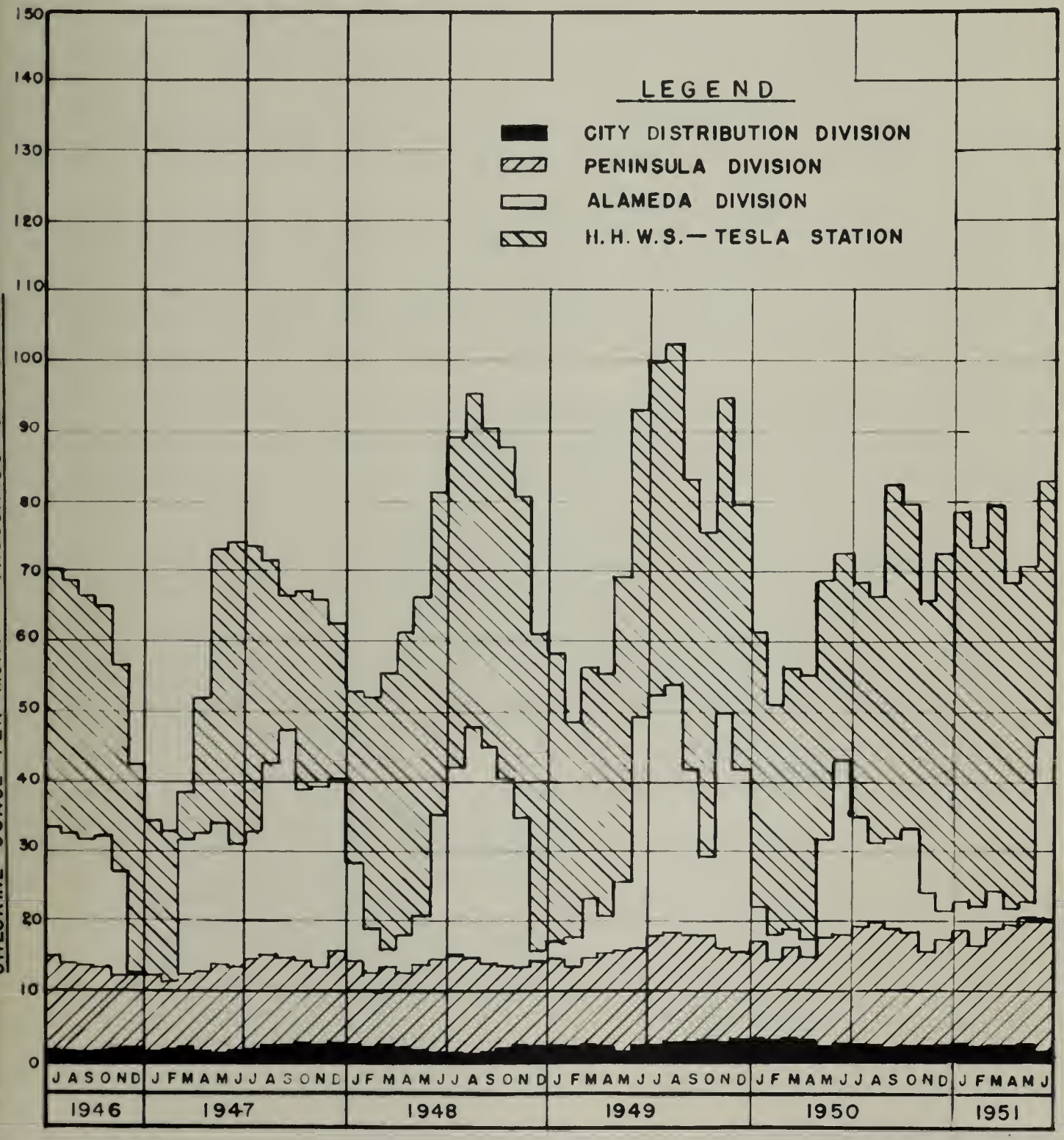


SAN ANDRES RESERVOIR



MONTHLY CHLORINE USAGE IN WATER SUPPLY SYSTEM

(PAST FIVE-YEAR COMPARISON)



ENGINEERING DIVISION

The work of the Engineering Division, during the past year, was primarily concerned with the preparation of plans, specifications, engineering studies, reports, estimates of cost, inspection of construction and in some cases the supervision of maintenance work. Various other services of a continuing nature were performed during the year including the preparation of property descriptions, revocable permits and the stating of conditions for land transactions; the maintenance of maps and records and the furnishing of photostatic and photographic service to all city owned utilities.

Plans and specifications were prepared for 41 formal and 9 informal Water Department contracts for a total estimated construction cost of $3,218,930. Engineering supervision and inspection services were provided for $6,266,200 worth of contract work actually completed during the year. Of the 41 formal contracts for which plans and specifications were prepared during the fiscal year 1950-51, 29 were for water main extensions.

Two of these extensions were awarded to the Water Department in an amount totaling $15,833.50; and were completed during the year at a cost of $14,717.07, or $1,116.43 less than the bid price.

A survey of proposed capital improvements to the water system was made, in connection with budgetary and city planning purposes, for the period beginning July 1, 1951, and ending June 30, 1957. Water Department requirements for this period were estimated at some $25,700,000.00 worth of improvements having varying degrees of urgency. A number of the more essential projects programed to start in the near future and for which funds have not been appropriated in whole or part, include the following projects:

Project	Total Estimated Cost
Cathodic Electrolysis Erosion Protection	$ 30,000.00
Balboa Reservoir - North Basin	2,850,000.00
Summit Reservoir	575,000.00
Summit Reservoir Pumps & Piping	71,000.00
Summit District Feeder Mains	126,000.00
Relocation of Crystal Springs Pipe Lines, Brisbane	532,000.00
Corporation Yard	1,180.000.00
Alameda Creek Siphon	550,000.00

Construction of Bay Division Pipe Line No. 3 is progressing according to schedule. Contract No. 524-B covers 17.23 miles of 72-inch inside diameter steel pipe, lined and coated with cement mortar and extends from near Milpitas to Stanford University Campus. This section was practically completed as of June 30, 1951. Contract No. 524-AC is divided into two parts:

Section A covers 8.57 miles of 78 inch inside diameter precast reinforced concrete pipe between Irvington Portal and Milpitas and was 90% complete on June 30, 1951.

Section C covers 7.85 miles of 72 inch inside diameter precast reinforced concrete pipe between Stanford University Campus and Pulgas Portal and was 76% complete on June 30, 1951.

On completion, scheduled for October 28, 1951, there will be a capacity of 76 million gallons per day added to the capacity of existing Bay Crossing Pipe Lines No. 1 and 2 making a total capacity of 180 million gallons per day from Irvington Portal to Crystal Springs reservoir.

Cleaning and coating the Bay Crossing pipe lines and their steel supporting trestle-work at Dumbarton were completed on September 2, 1950 at a cost of $59,222.00.

Contract No. 536, for the concrete lining and roofing of Sutro reservoir, was awarded to Granite Construction Company on December 18, 1950 for an estimated cost of $1,019,935.00. Upon completion, scheduled for November 1951, the capacity of the City reservoirs will be increaced by 32 million gallons. Excavation and embankment were completed in 1947 but deferred financing and requirements of the Art Commission delayed the award of the concrete lining and roofing contract until this year.

Contract plans and specifications are nearing completion for a new pumping station to be located on the southeasterly shore of Lake Merced that will provide electric motor driven pumping units for taking water from Crystal Springs reservoir, via the Sunset pipe line, and/or pump it into Sunset and Sutro reservoirs. This new pumping station and connecting water mains will also provide a means of taking water from Lake Merced during an emergency, such as occurred in 1906, whereby some 45,000,000 gallons per day for a period of about 40 days may be supplied to the City, thus allowing time to make almost any conceivable repair to the transmission mains bringing water into the City. Provision is also being made to permit extensions to the Station at some future time, for installation of diesel-electric generators for furnishing power during periods of interruptions to electricity supplied from outside sources.

Plans and specifications together with preliminary field engineering are nearing completion for the Burlingame to Millbrae portion of the 60-inch Sunset Supply Line. In 1949 that part of the Sunset supply line from Baden to Sunset reservoir was completed. Surveys are being made for the connecting portion between Millbrae and Baden. On completion this pipe line will provide additional capacity from the existing 60-inch Crystal Springs Pipe Line in Hillsborough to the Sunset Reservoir in San Francisco, with connections to the proposed Lake Merced Pumping Station and at a future date with San Andres Reservoir.

A brief description of work performed under contract during the fiscal year follows:

FORMAL CONTRACTS:

1. Additions to City Pipe System

In all contracts involving the laying of cast iron or transite pipe or the installation of services, the Contractor is required to obtain the pipe and fittings from the Water Department. The cost of this material, of connections made by the department's forces, and of engineering and inspection are included in the following stated contract costs. In cases where the Water Department acts as the Contractor the cost given is the actual cost of the completed work.

Extensions and replacements to the Department's distribution grid system are made under contract, the Department furnishing all necessary pipe, fittings and services material. The value of these items, and the engineering and inspection costs are set up in the contract bid sheets in a manner so that the "bid total" includes the cost of furnished items, engineering and inspection, and the summation represents the total cost to the Department for the facility. On most of this class of work the Water Department submits a bid and does the work if its bid is the lowest of those received.

Contract No. 534 - For the installation of 5 services and the laying of 527 feet of 6-inch and 433 feet of 8-inch cast iron mains in Kirkham Heights Subdivision. The contract was awarded to the Lowrie Paving Company on February 14, 1950, and completed on January 3, 1951 at the cost of $5,342.13.

Contract No. 537 - For the installation of 48 services and the laying of 921.5 feet of 6-inch and 360 feet of 8-inch cast iron mains in Colby, Dwight and University Streets. The contract was awarded to the Lowrie Paving Company on March 13, 1950, and completed on July 27, 1950 at the cost of $4,837.60.

Contract No. 545 - For the installation of 40 services and the laying of 668 feet of 6-inch and 74 feet of 8-inch cast iron mains in Athens Street and in Valmar Terrace. The contract was awarded to F. T. Fairey on May 31, 1950, and completed on November 3, 1950 at the cost of $3,328.99.

Contract No. 547 - For the laying of 45 feet of 8-inch and 2478 feet of 12-inch cast iron mains in Laguna Honda Boulevard and Clarendon Avenue. The contract was awarded to Callahan Construction Company on January 2, 1951, and completed on March 7, 1951 at a cost of $16,685.56.

Contract No. 549 - For the installation of 10 services and the laying of 247 feet of 6-inch cast iron mains in Apparel Heights Extension. The contract was awarded to E. J. Treacy on July 5, 1950 and completed on February 16, 1951 at a cost of $1,221.28.

Contract No. 550 R - For the laying of 1070 feet of 12-inch cast iron main in Bayshore Industrial Development. The contract was awarded to Fred T. Fairey on May 28, 1951 at the estimated bid price of $9,095.90. As of June 30, 1951 no work has been started on this contract.

Contract No. 551 - For the laying of 384.7 feet of 8-inch cast iron mains in Mendosa Avenue east of 10th Avenue. The contract was awarded to F. T. Fairey on August 14, 1950, and completed on September 19, 1950 at the cost of $2,935.75.

Contract No. 552 - For the installation of 55 services and the laying of 1,952 feet of 6-inch cast iron mains in Myra Way and in Summit Street. The contract was awarded to Fred T. Fairey on August 7, 1950, and was completed on October 25, 1950 at the cost of $9,195.19.

Contract No. 553 - For the laying of 2,004 feet of 8-inch cast iron mains in Wisconsin and 22nd Streets and Southern Heights Avenue. The contract was awarded to the San Francisco Water Department on September 25, 1950, and was completed on January 16, 1951 at the cost of $11,340.86.

Contract No. 555 - For the installation of 32 services and the laying of 654 feet of 6-inch and 538 feet of 8-inch cast iron mains in Jules Avenue from Grafton to Lakeview, and in 25th Street from Texas to Pennsylvania Street. The contract was awarded to Harold T. Treacy on October 16, 1950, and completed on March 23, 1951 at a cost of $6,189.42.

Contract No. 556 - For the laying of 1000 feet of 36-inch steel main in Division, Tenth and Bryant Streets. The contract was awarded to Arthur Wallgren on November 27, 1950, at the estimated bid price of $42,385.00. As of June 30, 1951 no work has been started on this contract.

Contract 558 - For the installation of 19 services and the laying of 162 feet of 6-inch and 706 feet of 8-inch transite mains and 162 feet of 12-inch cast iron mains in Everglade, Middlefield and Eucalyptus Drives. The contract was awarded to Fred T. Fairey on November 20, 1950 and completed on February 14, 1951 at a cost of $5,455.63.

Contract No. 559 - For the installation of 117 services and the laying of 1811 feet of 4-inch; 54 feet of 6-inch and 2155 feet of 8-inch cast iron mains in Golden Gate Heights. The contract was awarded to Harold T. Treacy on November 6, 1950, and completed on March 9, 1951 at a cost of $16,697.39.

Contract No. 560 - For the laying of 563 feet of 8-inch cast iron main in Willard Street between Parnassus and Belmont Avenues. The contract was awarded to San Francisco Water Department on November 20, 1950, and completed on March 1, 1951 at a cost of $3,376.21.

Contract No. 561 - For the installation of 91 services and the laying of 2171 feet of 6-inch and 468 feet of 8-inch cast iron mains in Sherwood Heights Subdividion. The contract was awarded to Fred T. Fairey on November 6, 1950, and completed on April 18, 1951 at a cost of $11,180.28.

Contract No. 562 - For the installation of 12 services and the laying of 733 feet of 8-inch cast iron mains in west side of 19th Avenue south of Cardenas Avenue. The contract was awarded to E. J. Treacy on March 26, 1951, and completed on May 16, 1951 at a cost of $5,706.16.

Contract No. 563 - For the laying of 250 feet of 8-inch cast iron main in Industrial Street between Revere and Charter Oak Avenues. The contract was awarded to Fred T. Fairey on December 26, 1950, and completed on January 30, 1951 at a cost of $1,921.31.

Contract No. 564 - For the installation of 64 services and the laying of 150 feet of 6-inch and 800 feet of 8-inch and 1850 feet of 12-inch cast iron mains in Midtown Terrace and Portola Drive. The contract was awarded to H. T. Treacy on January 22, 1951 at the estimated bid price of $21,811.00. As of June 30, 1951, no work has been started on this contract.

Contract No. 565 - For the installation of 66 services and the laying of 660 feet of 6-inch and 460 feet of 8-inch cast iron mains in Bright and Shields Streets. The contract was awarded to Fred T. Fairey on January 29, 1951 at the estimated bid price of $5,807.80. As of June 30, 1951, no work has been started on this contract.

Contract No. 566 - For the installation of 94 services and the laying of 670 feet of 6-inch and 1300 feet of 8-inch cast iron mains in Lawton Heights Subdivision. The contract was awarded to Fred T. Fairey on January 22, 1951, at the estimated bid price of $9,405.10. As of June 30, 1951, no work has been started on this contract.

Contract No. 567 - For the installation of 16 services and the laying of 640 feet of 6-inch cast iron main in Harkness Avenue between Alder and Sparta Streets. The contract was awarded to H. T. Treacy on February 26, 1951 at the estimated bid price of $3,346.70. As of June 30, 1951, no work has been started on this contract.

Contract No. 568 - For the laying of 476 feet of 8-inch cast iron main in 23rd and Minnesota Streets. The contract was a awarded to H. T. Treacy on February 26, 1951, and completed on April 9, 1951 at a cost of $2,960.64.

Contract No. 569 - For the laying of 3985.42 feet of 12-inch cast iron main in Newhall, Palou and Keith from Topeka to Newcomb. The contract was awarded to W. Lenkeit on March 5, 1951, and completed on June 22, 1951 at a cost of $28,777.87.

Contract No. 570 - For the laying of 4108 feet of 12-inch cast iron main across Golden Gate Park from Lincoln Way and 45th Avenue to Cabrillo Street and 46th Avenue. The contract was awarded to Harold T. Treacy on March 19, 1951, and completed on June 1, 1951 at a cost of $30,136.73.

Contract No. 572 - For the installation of 17 services and the laying of 768 feet of 6-inch cast iron main in Elmira Street between Helena Street and Shafter Avenue. The contract was awarded to Fred T. Fairey on March 12, 1951, and completed on April 30, 1951 at a cost of $3,015.81.

Contract No. 575 - For the laying of 1310 feet of 8-inch cast iron main in Bay Shore Boulevard between Industrial and Augusta Streets. The contract was awarded to E. J. Treacy on May 21, 1951 at an estimated bid price of $7,797.40. On June 30, 1951 the work was 75% completed.

Contract No. 577 - For the installation of 66 services and the laying of 1000 feet of 6-inch and 1020 feet of 8-inch transite mains in Olmstead, Bowdoin and Colby Streets. The contract was awarded to Fred T. Fairey on May 28, 1951 at an estimated bid price of $8,975.00. As of June 30, 1951, no work has been started on this contract.

2. Additions to Supply and Transmission Facilities:

Contract No. 524 - Construction of Bay Division Pipe Line No. 3 from Irvington Portal in Alameda County to the east portal of Pulgas Tunnel in San Mateo County, California, a distance of 34 miles. This was awarded in two contracts on November 23, 1949, Section AC at an estimated bid price of $4,246,464.50 to United Concrete Pipe Corporation, and Section B at an estimated bid price of $4,097,546.00 to Artukovich Bros., and Steve P. Rados, Joint Venturers. As of June 30, 1951, Section AC was 83% complete and Section B was 99% complete.

3. Miscellaneous Contracts:

Contract No. 536 - For the construction of a concrete lining and roof for Sutro reservoir. Contract was awarded to Granite Construction Company on December 18, 1950 at an estimated bid price of $1,019,935.00. On June 30, 1951 the work was 26% completed.

Contract No. 538 - For the rehabilitation of the Dumbarton Bridge and pipes. The contract was awarded to J. H. Mohr Company on March 13, 1950, and completed on September 2, 1950, at a cost of $59,222.00.

Contract No. 540 - The construction of Retaining Wall, Curb and Fence around Potrero Heights Reservoir. Contract was awarded to Lowrie Paving Company on February 13, 1951, and was completed on May 23, 1951 at a cost of $10,147.19.

Contract No. 544 - For the repavement of Street and sidewalk openings made by the Department for installation or repair work during the fiscal year 1950-51. The contract was awarded to the Pacific Pavement Company, Ltd., on May 1, 1950, and terminated June 30, 1951 at a cost of $80,256.79. Repavement over trenches opened by other contractors, performing work for the Department, is not included under this annual paving contract, as each contractor is required to provide his own paving.

Contract No. 548 - For the relining of north portion University Mound Tunnel. Contract was awarded to Johnson Western Gunite Company on June 26, 1950, and was completed on September 9, 1950 at a cost of $2,813.01.

Contract No. 554 - For the construction of a chlorination plant at San Andres Outlet No. 1. The contract was awarded to Wenrick and Associates on October 2, 1950 at an estimated bid price of $21,609.00. On June 30, 1951 the work was 61% completed.

Contract No. 557 - For the gathering and delivering of walnut crop from the orchard at Sunol. The contract was awarded to John Helzer on September 25, 1950, and completed on November 3, 1950 at a cost of $6,787.96.

Contract No. 581 - For the surfacing of roadways at Millbrae. Contract was awarded to Ben Blair on June 25, 1951 at an estimated bid price of $3,610.30. As of June 30, 1951 no work has been started on this contract.

4. Informal Contracts:

The following work, involving amounts of less than $2000.00, was done under a service order issued after posting a bid invitation and receiving informal bids.

Informal Bid No. I-88: For installing window glass in various windows in San Francisco Water Department Building at 425 Mason Street. Work Order was issued to Mygrant Glass Company on August 17, 1950. Total cost was $175.00.

Informal Bid No. I-89: For the refilling of expansion joints and cracks in sidewalks at 425 Mason Street. Work Order was issued to Phoenix-Simpton Company November 28, 1950. Total cost was $274.00.

Informal Bid No. I-90: Covers loading into State of California trucks, surplus material from trench excavation in conformity with requirements of deed from Ralph W. Johnson, et al., on Bay Division Pipe Line No. 3, in Santa Clara County, California. Work order was issued to Artukovich Bros., and Steve Rados, Inc., October 10, 1950. Work was completed at a cost of $1,650.00.

Informal Bid No. I-91: For the Furnishing and Installing of a Fire Door at Opening to Elevator in the Basement at 425 Mason Street. Work order was issued to Otis Elevator Company January 4, 1951. Total cost was $341.96.

Informal Bid No. I-92: For the Repairing of Pent House Roof on Pent House Roof on Building at 425 Mason Street. Work order was issued to Alta Roofing Company dated December 4, 1950. Work was completed at a cost of $104.00.

Informal Bid No. I-93: For the Furnishing and Installing of a Fire Door between Basement and Stair Corridor in Water Department Building, 425 Mason Street. Work order was issued to Wieland and Sons, December 28, 1950. Total cost was $325.00.

Informal Bid No. I-94: For Repairing Window Sills and Heads at Water Department Building, 425 Mason Street. Work order was issued to Robert David, January 10, 1951. Work was completed at a cost of $283.00.

Informal Bid No. I-95: For "Relighting for Room #601, Water Department Building, 425 Mason Street." Work order was issued to Republic Electric Company, January 10, 1951. Cost of work was $760.00.

Informal Bid No. I-96: "Reconstruction in Room 410, Water Department Building, 425 Mason Street." Work order was issued to Phoenix-Simpton Company, March 29, 1951, and work was completed at a cost of $1,723.00.

SUTRO RESERVOIR - EAST HALF OF RESERVOIR LOOKING SOUTHEAST.

AGRICULTURAL DIVISION

On July 1, 1951 the area owned in fee was 63,306.4 acres, which was 31.1 acres more than the acreage shown in the Annual Report of June 30, 1950. This increase is made up as follows:

	Acres	Acres
PURCHASES:		
Land for Bay Division Pipe Line #3		65.083
SALES:		
Parcel #4 Portion of San Mateo Lands	.342	
" #59 Lot 29,Block 77,Merritt Terrace	.115	
" #49 Portion of Laguna Honda Tract	5.200	
" #55 Portion of Lake Merced Lands	20.237	
" #30 Portion of San Mateo Lands	7.086	
" #4 and 5 - Clay Street Tank Site	1.034	
	34.014	65.083
Net Increase in Acres		31.069

Kind of Lease	Leased Acreage	No. of Leases	Income
AGRICULTURAL:			
Cattle	29,718.000	15	$87,426.32
Flat Rate	1,907.732	48	31,766.66
Share Crop	3,452.180	12	12,191.19
NON-AGRICULTURAL:			
Flat Rates	108.494	61	8,671.28
Olympic Club Golf Course	17.350	1	2,400.00
Royalties - Rock Quarry	24.500	1	21,802.94
Royalties - Crystal Springs Golf Course	172.530	1	7,237.64
Taxes Paid by Tenants			None
	35,400.786	139	$171,496.03
WALNUT ORCHARD:			
Sale of Walnuts	100.000	0	$ 28,232.56
	35,500.786	139	$199,728.59

CATTLE LEASES:

During the year 1950-51, there were 15 cattle leases with a total area of 29,718 acres. The rentals, however, increased 22.9 per cent including the base rentals, bringing an income of $87,426.32, or an increase of $16,244.63 over the previous year. This increase was due to an increase in the price of beef as of July, 1950.

All of the new cattle leases run for a period of five years, from November 1, 1948, with rentals based on a sliding scale according to sale prices of cattle during specified periods in each year. Basic rental is stipulated in each lease.

This method of basing rentals on a sliding scale is in accord with our established practice, the cattlemen paying a higher rental when cattle prices are high and a correspondingly lower amount when lower prices prevail. Cattlemen, generally, seem to be in favor of this method of adjusting rentals. High prices for beef cattle still continue and are not likely to recede during the year 1951 with a possible war demand for beef in sight.

Rainfall was ample during the winter months, causing satisfaction to cattlemen in general as well as an earlier than usual movement of range cattle to markets, so that real good top grade quality is now lacking to a large degree.

Most of the cattle leases were renewed by the Agricultural Division before the expiration of the former term with material advances in rentals for the next five years. Lease provisions advocated erosion control and disease prevention, replanting, and construction of water storage for cattle.

SHARE CROPS:

Twelve leases on a share crop basis covering an area of approximately 3,452 acres, yield an income of $12,191.19 for crops. Some of these leases paid a cash rental in addition to the share of crops. The principal crops raised were oats, barley, wheat, irrigated pasture, alfalfa hay, and barley and wheat grain, all of which were sold at good prices.

Two hundred acres of new alfalfa lands on the "Sunol Irrigable Lands" tract are now not only bringing in about three to four times the income to the City that they brought when formerly in dry land (grain) farming, but are restoring fertility to these lands, so nearly exhausted of their fertility by too many years of grain and hay production. Of the water used irrigating these crops, approximately 40 to 60% runs through the soil and back into the City's filter galleries for City usage.

One hundred and twenty five acres of land are now planted to strawberries and doing well. The City receives a basic cash rent and one-quarter of the crop for the alfalfa and irrigated pasture and a high cash rent for the strawberry land.

WALNUT ORCHARD:

Of the walnuts, the early maturing, early bearing Payne walnut variety alternated with the reliable Franquette and Hartley Franquette walnut varieties starts the City's income five years earlier by this type of Payne interplanting. All of these are making a very satisfactory growth and are being irrigated, pruned and staked.

The interplanting of strawberries between young walnut trees for the first four years of young tree growth makes a strong combination for leveling, fertilizing, cultivating and especially irrigating the City's young trees by the strawberry tenant without extra cost to the City. A future lease on this land is being considered for planting to vegetables on this previously levelled 35 acre tract.

Ammonia, mustard and vetch planting generally took the place of liming the ground for the walnut orchard but liming was applied to some spots in the old orchard.

This season, thinning out of the thickest limbs in many trees of the old walnut orchard seemed to invigorate the 39 year old orchard most noticeably, but due to strong growth and wide spread of branches to a point where the trees touch each other, alternate trees may have to be removed in the future for better penetration of sunshine and light, and to provide better soil sustenance.

The City's 620 acres at Pleasanton were most favorably leased on a cash basis for a long term, to a high grade tenant who intends to raise roses. The project is progressing favorably.

This rose lease requires the tenant to pay the cost of improving the City's land to the extent of between $50,000 and $75,000 and, in addition, brings in a rental of about $25.00 per acre a year ($101,105.00 in 8 years) compared to $10.00 an acre per year from the former tenant in 1948.

FENCING AND BOUNDARY LINES:

Fencing work on the properties was confined to the usual repairs and upkeep of boundary fences. All labor was furnished by the tenants and the material was furnished by the Department.

CARE OF PROPERTY:

Morning Glory infestation is being considerably retarded in hay and 125 acres of strawberry lands, and practically eliminated in the one hundred acre walnut orchard around Sunol but Morning Glory needs attention at Pleasanton and in its young walnut orchard.

Good cooperation is generally experienced between the Agricultural Division personnel and the tenants in arriving at decisions and agreements. Fertilizers to be used by the tenants on City lands needing same are discussed and their use agreed upon to the mutual advantage of the parties involved. Due to the shortage and high price of labor, some additional power farm implements should be installed.

Sanitary provision measures are strictly enforced in all leases to insure against water pollution.

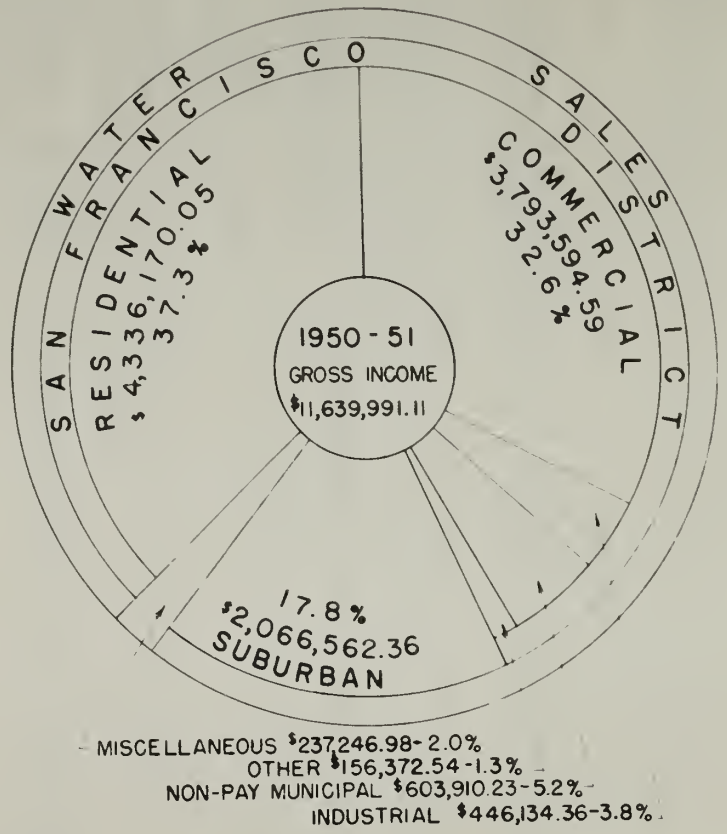
This Division is handling the tillage and leasing of a large acreage of San Francisco Water Department lands located in three counties. The operation has been carried on with one Agricultural Superintendent, his assistant, stenographer, one foreman and three laborers.

WALNUT CROP AND VALUE DURING CITY OWNERSHIP

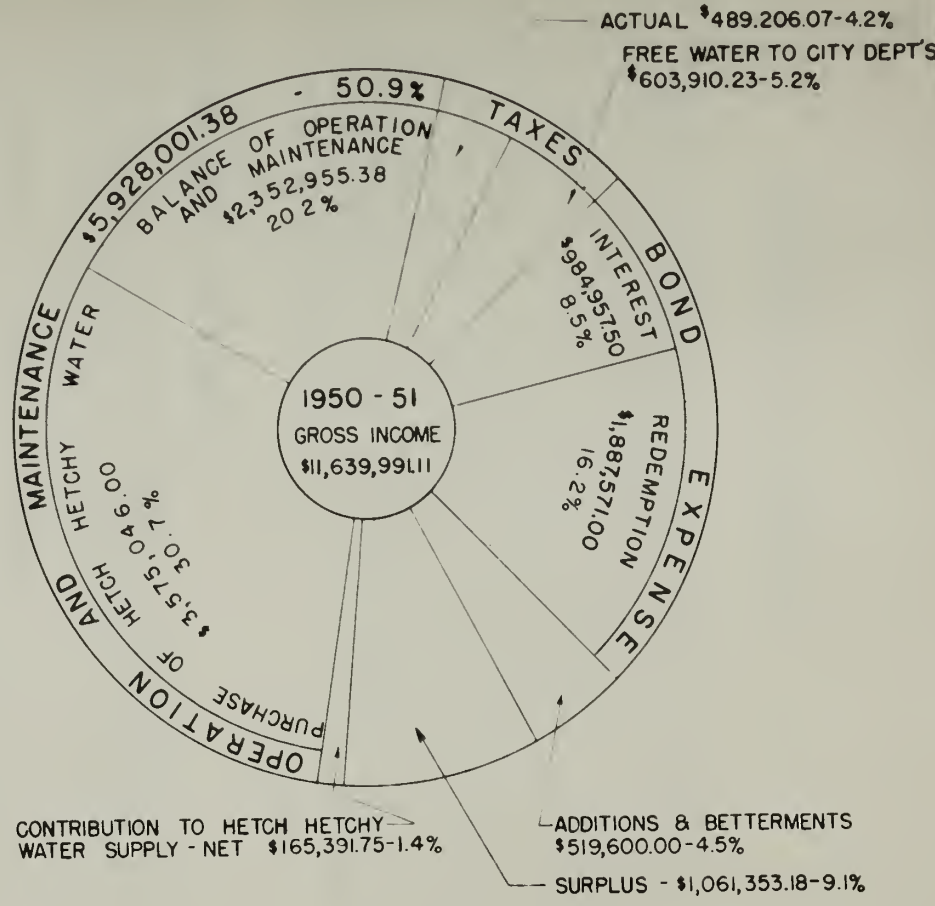
	Total Yield Pounds	Gross Value	Net Cash Received	Association Charges % of Gross *	Packing House Charges per lb.
1930	110,361.	$23,905.44	$20,024.55	16.23	$.0138
1931	91,570.	13,778.73	12,272.73	10.93	.0091
1932	206,795.	28,994.25	20,391.18	29.67	.0070
1933	153,080.	23,635.21	17,905.45	24.24	.0073
1934	136,672.	18,039.52	13,236.00	26.63	.0059
1935	209,095.	27,359.11	22,719.87	16.96	.0045
1936	187,605.	27,865.13	24,947.57	10.47	.0046
1937	179,954.	23,808.71	21,102.05	11.37	.0042
1938	258,934.	36,812.05	31,801.16	13.61	.0090
1939	153,770	12,747.35	11,366.74	10.83	.0124
1940	90,148.	13,570.25	11,671.08	14.00	.0100
1941	239,062.	37,182.09	29,807.07	19.83	.0088
1942	254,594.	45,744.85	44,000.73	3,81	.0068
1943	188,590.	49,552.64	48,373.84	2.38	.0082
1944	107,831.	29,487.66	26,901.72	8.77	.0138
1945	214,919.	62,893.03	58,474.64	7.03	.0126
**1946	240,883.	73,017.57	73,017.57	0	0
**1947	81,167.	16,700.11	16,700.11	0	0
**1948	196,529.	39,896.52	39,896.52	0	0
**1949	153,434.	25,546.71	25,546.71	0	0
1950	135,377	28,232.56	26,668.05	5.54	.0116
Prior Years Adjust		3,431.54	3,431.54	---	---
	3,590,370	662,201.03	600,256.88		

* Includes cost of surplus control, operating reserve and revolving fund in addition to actual Association charges for marketing expense.

** Sold under competitive bids.



SOURCE OF INCOME
FISCAL YEAR ENDING JUNE 30, 1951



DISPOSITION OF GROSS INCOME
FISCAL YEAR ENDING JUNE 30, 1951

ACCOUNTING AND AUDITING

The accounts of the San Francisco Water Department are maintained strictly in accordance with the requirements of the State Public Utilities Commission and Section 64 of the Charter, and the accounts of the Department have been so coordinated with the Controller's system that no encumbrance or expenditure against budget estimates can be incurred without prior certification from the Controller that funds are available. As provided in Ordinance 9,0621,an annual audit of the Department is made as of June 30, by a firm of certified public accountants. The accountant's report is not available at the time the Department's financial statement goes to press, hence there may be minor differences between the two reports due to reclassifications made by the accountants.

Comments on Financial Statements:

An analysis of the disposition of Earned Surplus, together with additions thereto and deductions therefrom is shown in the body of these comments.

The following financial statements and cost reports are presented:

Balance Sheet June 30, 1951 (Exhibit A).

Income Statement for the years ended June 30, 1950 and June 30, 1951 (Exhibit B).

Surplus Account June 1951 (Exhibits C and D).

Comparative Statement of Operating Expenses for fiscal year 1949-50 and 1950-51 (Exhibit E).

Operating Expenses for past four fiscal years (Schedules Nos. 1, 2, 3 and 4).

Additions, Betterments and Replacements for fiscal year 1950-51 (Schedule No. 5).

Agricultural Division, Receipts and Expenses for past five years (Schedule No. 6).

Operating Expenses, City Distribution Division for fiscal year 1950-51 (Schedule Nos. 11 and 12).

Operating Expenses, outside of San Francisco for fiscal year 1950-51 (Schedules Nos. 13 and 14).

Sale of water for the fiscal year 1950-51 was $11,402,744.13 as against $10,774,943.90 for prior year, an increase of $627,800.23, or 3.55% in San Francisco and 2.06% in the suburban districts.

Other Income amounts to $237,246.98, as against $201,651.22 for prior year, an increase of $35,595.76. Increase in Rental Income accounted for $31,621.04 of the total increase.

Operating Expenses show a net decrease of $55,213.70 as shown by the following tabulation:

	Increase	Decrease
Source of Supply	$ 29,144.22	$
Standby Charge and Purchase of Water		13,458.63
Pumping Expenses		16,620.61
Purification Expenses	9,404.56	
Transmission and Distribution Expenses		50,779.33
Commercial Division Expenses		51,552.14
Administrative and General	33,305.60	
Taxes Actual	506.86	
Provision for Doubtful Accounts	1,096.77	
Provision for Depreciation	33,673.17	
Municipal Taxes, Comparison*		19,934.17
Net Decrease	45,213.70	
	$152,344.88	$152,344.88

*Water delivered to Municipal Departments offset by taxes.

Other Operating Expenses decreased $67,184.84 due principally to the decrease in amount of interest paid on $1,563,000 worth of bonds retired during the year.

SAN FRANCISCO WATER DEPARTMENT

DISPOSITION OF SURPLUS

	To June 30, 1950	Year 1950-51	To June 30, 1951
SURPLUS			
Contributed to:			
General Fund	$15,992,457.24	$	$15,992,457.24
Hetch Hetchy Project	4,510,127.21		4,510,127.21
Hetch Hetchy Power	1,228.59		1,228.59
Appropriated for:			
Bond Redemption - Spring Valley	20,000,000.00	1,000,000.00	21,000,000.00
Bond Redemption - 1933 Water Distribution	7,598,594.33	563,000.00	8,161,594.33
Bond Redemption - 1947 Hetch Hetchy		272,719.00	272,719.00
Bond Interest - 1947 Hetch Hetchy	241,834.98	217,243.75	459,078.73
Additions & Betterments	13,791,680.79	1,389,500.00	15,181,280.79
Additions & Betterments - Lake Merced Project	1,250,000.00		1,250,000.00
Purchase of Land	22,858.50		22,858.50
Other Purposes	100,429.29		100,429.29
Surplus	81,128.86	-353,609.57	-272,480.71
	$63,590,339.79	$3,088,953.18	$66,679,292.97
Add:			
Initial Excess Earnings - Spring Valley Water Co.	$ 4,152,652.24	$	$ 4,152,652.24
Valuation Municipal Water Works	100,000.00		100,000.00
Grants Earned on Federal Projects	2,358,987.60		2,358,987.60
Surplus Material and Equipment from Construction Projects	373,820.56	-778.97	373,041.59
Land Sales - Profit	449,900.27	137,245.09	587,145.36
Bond Premiums	821,684.38		821,684.38
Palo Alto Pipe Line	332,271.90	28,000.00	360,271.90
Miscellaneous Additions	362,160.50	30,206.62	392,367.12
Bay Bridge Pump and Supply Line	120,423.26		120,423.26
	$ 9,071,900.71	$ 194,672.74	$9,266,573.45
Deduct:			
Contributed by Hetch Hetchy Power for Sutro Reservoir	$ 410,700.00	$	$ 410,700.00
Contribution to General Fund	15,992,457.24		15,992,457.24
Deficit County Line Water Works	19,189.15		19,189.15
Payment, for purpose of enabling City to take over properties in advance	745,274.31		745,274.31
Lands contributed to City	172,564.67		172,564.67
Contribution to Other Public Service Enterprises	4,477,166.10		4,477,166.10
Miscellaneous Deduction from Surplus	275,080.55	469.15	275,549.70
Depreciation due to Revaluation	8,482,295.33		8,482,295.33
Depreciation not Funded (Accrued since 3/3/30)	10,442,254.94	885,078.04	11,327,332.98
	$41,016,982.29	$ 885,547.19	$41,902,529.48
	$31,645,258.21	$2,398,078.73	$34,043,336.94

EXHIBIT "A"

SAN FRANCISCO WATER DEPARTMENT

BALANCE SHEET - JUNE 30, 1951

REVISED

ASSETS

FIXED CAPITAL:		
In Service	$ 78,537,553.10	
Less Provision for Depr'n	29,841,518.73	
	$ 48,696,034.37	
Construction in Progress	925,355.26	$ 49,621,389.63
CASH:		
Treasurer's Balance, Schedule Annexed	$ 5,867,936.40	
Revolving Fund	30,000.00	
Other Cash	-	5,897,936.40
ACCOUNTS RECEIVABLE:		
Consumers' Accounts	$ 984,882.22	
Less Reserve for Losses	4,000.00	
	$ 980,882.22	
OTHER ACCOUNTS RECEIVABLE:		
Revenue	12,687.66	
Non-Revenue	16,799.84	1,010,369.72
Interfund Accounts:		
Schedule Annexed:		
Public Service Enterprises	$ 1,964.84	
General City and County	1,722.63	3,687.47
Deferred Charges:		
Prepaid Taxes		
Deposits for Orders of Possession	67,622.00	
H. H. Water Supply	-	
Materials and Supplies	633,487.40	
Reserve Fund Expenditures Unbilled	304,012.29	
Miscel. Jobbing & Sales Accounts, etc.	1,781.52	
Public Utilities Commission	1,959.94	1,008,863.15
TOTAL ASSETS		$57,602,246.37

LIABILITIES

BONDED DEBT:		
Spring Valley Water Bonds, 1928	$20,000,000.00	
Water Distribution Bonds, 1933	1,683,000.00	
	$21,683,000.00	
Matured, not presented for payment:		
Spring Valley, 1928	28,000.00	$21,711,000.00
BOND INTEREST PAYABLE:		
Accrued, not due:		
Spring Valley Water Bonds, 1928	$ 450,000.00	
Water Distribution Bonds, 1933	5,610.00	
	$ 455,610.00	
Matured, not presented for payment:		
Spring Valley, 1928	10,755 00	
Water Distribution, 1933	1,020.00	467,385.00
Expenditures made by 1947 Hetch Hetchy Water Bond Fund for S.F.W.D.		523,109.49
Accounts Payable:		
Warrants Outstanding, Schedule Annexed	$ 168,149.50	
Consumers' Deposits and Advances	216,504.30	
General Creditors	150,090.55	
Accrued Payroll		
Payroll Deductions Payable	26,960.14	561,744.49
Interfund Accounts:		
Schedule Annexed:		
Public Service Enterprises	$ 130,563.13	
General City and County	22,965.71	153,528.84
Deferred Credits:		
Reserve for Compensation Insurance	$ 89,249.84	
Reserve for Unpaid Rev. Fund Checks	4,656.16	
Other Deferred Credits	48,244.61	142,141.61
SURPLUS, Schedule Annexed		34,043,336.94
TOTAL LIABILITIES		$ 57,602,246.37

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EXHIBIT "B"

SAN FRANCISCO WATER DEPARTMENT

INCOME ACCOUNT

TWELVE MONTHS ENDING JUNE 30, 1951 AND 1950

R E V I S E D

	Twelve Months ending June 30 1951	Twelve Months ending June 30 1950	Increase or Decrease —	Cumulation from March 3, 1930 to June 30, 1951
SALE OF WATER:				
San Francisco	$8,678,025.05	$8,380,675.13	$ 297,349.92	$147,383,512.76
Outside of San Francisco	2,066,565.30	1,713,304.25	353,261.05	16,087,711.25
Municipal Departments - Actual	54,243.55	57,120.12	— 2,876.57	1,251,142.39
" " - Comparison*	603,910.23	623,844.40	—19,934.17	9,971,294.02
	$11,402,744.13	$10,774,943.90	$ 627,800.23	$174,693,660.42
OPERATING EXPENSES:				
Source of Water Supply	$ 316,366.50	$ 287,722.28	$ 29,144.22	$ 5,536,983.03
Standby Charge & Purchase of Water	3,575,046.00	3,588,504.63	—13,458.63	22,289,631.92
Pumping	305,623.31	322,243.92	—16,620.61	5,601,408.82
Purification	112,379.51	102,974.95	9,404.56	1,400,697.36
Transmission & Distribution	640,613.01	691,392.34	—50,779.33	8,070,027.08
Commercial Division	490,706.11	542,258.25	—51,552.14	8,560,695.17
Administrative and General	438,773.28	405,467.68	33,305.60	6,761,374.43
Taxes - Actual	489,206.07	488,699.21	506.86	6,274,147.35
Provision for Doubtful Accounts	3,119.13	2,022.36	1,096.77	237,373.56
Provision for Depreciation	940,078.04	906,404.87	33,673.17	21,891,098.19
Municipal Taxes - Comparison*	603,910.23	623,844.40	—19,934.17	9,987,532.74
	$ 7,916,321.19	$ 7,961,534.89	$ —45,213.70	$ 96,610,975.15
PROFIT FROM OPERATIONS:	3,486,422.94	2,813,409.01	673,013.93	78,082,685.27
OTHER INCOME:				
Rentals, incl. Crop Shares	179,401.03	147,779.99	31,621.04	1,729,641.01
Interest Earned	15,994.77	15,069.91	924.86	444,931.15
Sale of Walnuts	28,232.56	25,546.71	2,685.85	662,201.03
Miscellaneous	13,618.62	13,254.61	364.01	218,885.02
	$ 237,246.98	$ 201,651.22	$ 35,595.76	$ 3,055,658.21
OTHER EXPENSES:				
Bond Interest	$ 984,957.50	$ 1,052,577.44	$ —67,619.94	$ 33,681,129.64
Agricultural Division	22,362.02	19,796.28	2,565.74	333,007.12
Walnut Orchard Expense	22,085.10	23,210.78	— 1,125.68	427,155.28
Miscellaneous	427.41	1,432.37	—1,004.96	74,005.89
	$ 1,029,832.03	$ 1,097,016.87	$ —67,184.84	$ 34,515,297.93
NET INCOME	$ 2,693,837.89	$ 1,918,043.36	$ 775,794.53	$ 46,623,045.55

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* Water Service to Municipal Departments offset by Municipal Taxes.

EXHIBIT "C"

SAN FRANCISCO WATER DEPARTMENT

SURPLUS ACCOUNT

FOR TWELVE MONTHS ENDING JUNE 30, 1951

REVISED

SURPLUS, JUNE 30, 1950	$31,645,258.21	
ADD:		
Net Income for Twelve Months ending June 30, 1951	2,693,837.89	
Miscellaneous Additions to Surplus	204,652.72	
Contribution from Hetch Hetchy Water Supply	4,904.35	$34,548,653.17
DEDUCT:		
Miscellaneous Deductions from Surplus	15,953.43	
Contribution to 1947 Hetch Hetchy Water Bond Fund	102,362.75	505,316.22
SURPLUS - JUNE 30, 1951		$34,043,336.94

EXHIBIT "D"

[illegible]

[illegible] CONTROLLED

[illegible] 30, 1951

REVISED

INITIAL SURPLUS - MARCH 3, 1930			
Amortization on Contribution (Spring Valley)	$ 4,152,652.24		
Valuation of Municipal Water Works	100,000.00		
	$ 4,252,652.24		
Less: Add'l allowance for depreciation, March 1,1920 to March 3, 1930	2,327,916.67	$1,924,735.57	
ADDITIONS:			
Net Profit, March 3, 1930 to June 30, 1951	$46,623,045.55		
Miscellaneous and year to year adjustments	4,533,896.21		
Contributions from Hetch Hetchy Power Division	409,471.41	51,566,413.17	
Grants earned on Federal Public Works Project		2,350,987.60	
Year to year - Additions to Surplus - June 30, 1951		1,504,481.49	$ 57,354,617.83
DEDUCTIONS:			
Contributions to General Fund		$15,992,457.24	
" " 1947 H. H. Water Bond Fund	$ 731,797.73		
" " H. H. Water Supply	4,423,986.34	5,155,784.07	
Lands Contributed:			
To City and County of San Francisco for Streets and Boulevards		172,564.67	
Excess of Adjusted Book Value of Plant Appraisal, Dec. 31, 1937		1,990,474.91	23,311,280.89
SURPLUS - JUNE 30, 1951			$34,043,336.94

PUBLIC UTILITIES COMMISSION
SAN FRANCISCO WATER DEPARTMENT

EXHIBIT E

COMPARATIVE STATEMENT OF OPERATING EXPENSES
FOR THE FISCAL YEARS ENDED JUNE 30, 1951 AND JUNE 30, 1950

	Fiscal Year ended June 30 1951	1950
SOURCE OF WATER SUPPLY EXPENSES:		
Superintendence	$ 47,208.56	$ 40,721.67
Operating Labor	59,359.99	65,176.85
Operating Supplies and Expenses	19,219.65	17,055.93
Repairs & Maintenance- Buildings, Fixtures and Grounds	115,710.81	119,277.76
Repairs - Surface Facilities	75,367.49	45,490.07
	$ 316,866.50	$ 287,722.28
PUMPING EXPENSES:		
Labor - Pumping	$ 78,036.05	$ 79,576.47
Labor - Miscellaneous		-0-
Fuel for Steam	48,804.76	43,046.20
Power Purchased	162,267.85	177,115.48
Lubricants	55.84	89.60
Miscellaneous Supplies and Expense	2,784.32	3,059.55
Repairs - Primary Pumping Equipment	8,244.34	12,375.12
Repairs - Boilers and Equipment	336.54	276.67
Repairs - Miscellaneous Equipment	645.93	940.04
Repairs - Building Fixtures and Grounds	4,447.68	5,764.79
	$ 305,623.31	$ 322,243.92
PURIFICATION EXPENSES:		
Superintendence and Labor	$ 39,572.33	$ 41,436.65
Supplies and Expense	68,533.48	55,713.27
Repairs - Plant, Structures and Equipment	4,273.70	5,445.20
Repairs and Maintenance - Roads and Trails	-	379.83
	$ 112,379.51	$ 102,974.95
TRANSMISSION AND DISTRIBUTION EXPENSES:		
Superintendence	$ 54,024.92	$ 69,238.53
Patrolling Storage Facilities	18,948.96	20,659.14
Meters and Fittings Department	140,032.55	123,167.16
Street Department	24,453.55	27,651.49
Consumers' Premises Expenses	47,116.09	31,449.70
Miscellaneous Supplies and Expenses	10,438.03	16,157.18
Repairs - Transmission Mains and Canals	29,538.91	68,161.67
Repairs - Reservoirs, Tanks and Standpipes	1,806.22	3,523.79
Repairs - Distribution Mains and Canals	133,059.38	130,290.40
Repairs - Service Connections	121,572.52	123,569.52
Repairs - Distribution Buildings and Grounds	34,472.48	36,985.04
Repairs - Distribution Equipment	3,430.02	3,124.06
Reconstruct and Relocate Pipe Lines and Services	11,719.33	37,414.66
	$ 640,613.01	$ 691,392.34

PUBLIC UTILITIES COMMISSION
SAN FRANCISCO WATER DEPARTMENT

EXHIBIT E

- Continued -

	Fiscal Year ended June 30 1951	1950
COMMERCIAL EXPENSES:		
Collections	$118,344.98	$145,869.53
Reading Meters	69,884.11	74,432.50
Bookkeeping Department	162,136.33	164,398.87
General	66,488.76	62,807.33
Inspection and Service	53,311.19	72,762.56
Shipping	20,540.74	21,987.46
	$490,706.11	$ 542,258.25
ADMINISTRATIVE AND GENERAL EXPENSE:		
Salaries - General Officers	$ 20,768.64	$ 20,049.16
Salaries - General Office Clerks	63,123.12	62,226.08
Miscellaneous Supplies and Expenses	2,757.20	4,583.16
Injuries and Damages	15,884.81	19,804.54
Retirement System Contributions	100,271.76	76,653.84
Mason Street Building Expense	33,477.34	34,009.42
Telephone Service	28,016.34	27,264.85
Guest Cottages and Rest Room	702.37	187.03
General Engineering	68,616.20	72,149.98
Hydrography	865.97	1,168.32
Miscellaneous	2,493.49	2,948.69
Compensation Insurance	14,891.62	10,223.88
Other Insurance	1,543.66	7,662.94
Repairs - Mason Street Building	3,535.73	3,305.89
Repairs - Telephone System	12,998.59	13,684.86
Professional Services	17,846.69	3,000.00
Public Utility Commission Expense	50,979.75	46,525.04
Property Taxes (Outside of San Francisco)	489,206.07	488,699.21
	$ 927,979.35	$ 894,166.89
Repairs - Extraordinary: Remodeling Fifth Floor, Mason St. Bldg.		-
Repairs - Extraordinary: Recondition Alameda Supply Line		-
		$ 894,166.89

PUBLIC UTILITIES COMMISSION
SAN FRANCISCO WATER DEPARTMENT

SCHEDULE NO. 1

OPERATING EXPENSES

RESERVOIRS AND SOURCES:	1947-1948	1948-1949	1949-1950	1950-1951
INSIDE OF SAN FRANCISCO:				
Lake Merced	$ 4,595.16	$ 4,558.12	$ 5,146.96	$ 4,514.79
OUTSIDE OF SAN FRANCISCO:				
SURFACE SOURCES:				
San Andres Reservoir	$ 18,931.31	$ 15,487.12	$ 15,440.14	$ 22,021.06
Crystal Springs Reservoir	47,274.77	40,403.68	50,950.63	51,518.03
Pilarcitos Reservoir	21,456.09	33,673.10	27,504.94	26,852.88
Calaveras Reservoir	14,664.80	11,344.55	12,750.27	10,752.20
	$102,326.97	$100,908.45	$106,645.98	$111,144.17
GROUND SOURCES:				
Sunol Filter Beds	$ 14,673.85	$ 16,741.14	$ 11,713.64	$ 11,227.50
Pleasanton Wells	9,544.51	15,999.06	3,437.16	2,135.64
	$ 24,218.36	$ 32,740.20	$ 15,150.80	$ 13,363.14
SUPPLY LINES AND AQUEDUCTS:				
Bay Division Pipe Lines	$ 52,729.93	$ 29,994.11	$ 21,790.69	$ 67,087.80
Stone Dam Aqueduct	12,137.85	8,051.86	6,143.20	3,515.32
Niles-Irvington Pipe Line	2,787.69	2,228.48	3,795.93	5,314.61
Other Supply Lines and Aqueducts	4,897.83	3,984.39	19,878.74	6,636.24
	$ 72,553.30	$ 44,258.84	$ 51,608.56	$ 82,553.97
Alameda System - General Expenses	$ 28,112.19	31,387.89	30,693.37	27,139.79
Peninsula System - General Expenses	106,583.59	77,325.45	78,476.61	78,150.64
	$134,695.78	$108,713.34	$109,169.98	$ 105,290.43
TOTAL SOURCE OF SUPPLY EXPENSE	$338,389.57	$291,178.95	$287,722.28	$ 316,866.50

SAN FRANCISCO WATER DEPARTMENT

SCHEDULE NO. 2
OPERATING EXPENSES

PUMP STATIONS	1947-1948	1948-1949	1949-1950	1950-1951
INSIDE OF SAN FRANCISCO:				
STEAM PLANTS:				
Central	$95,926.35	$108,702.87	$ 96,356.15	$101,996.48
City	43.48	65.93	108.40	12.22
Clarendon Height	630.70	503.17	475.14	489.73
	$96,600.53	$109,271.97	$ 96,939.69	$102,498.43
ELECTRIC PUMPS:				
Francisco Street	$ 9,119.51	$ 3,279.85	$ 3,853.60	$ 3,266.69
Alemany	48,356.44	41,126.45	40,953.82	33,921.36
Bay Bridge Pump - Treasure Island	7,590.99	6,656.97	4,968.93	6,982.70
Daly Hill	2.40	-0-	-0-	-0-
Forest Hill	6,449.05	7,717.55	7,717.28	8,097.61
Potrero Heights	485.23	769.03	1,584.22	475.62
Newcomb Avenue	5,879.16	6,046.11	6,354.40	5,801.33
Hillside	58.74	-0-	-0-	-0-
Fairview	687.09	510.87	543.09	650.02
Lincoln Park	1,180.33	920.91	840.25	728.46
Palo Alto	383.91	337.07	422.54	272.82
Twin Peaks	597.30	691.23	628.05	1,104.28
Lake Honda Booster	368.20	709.44	423.55	287.10
Sunset Booster	604.51	300.99	498.64	453.04
Sunset Source	-0-	16.25	1.92	1.60
Olmstead and University	1,417.62	2,050.51	1,191.73	915.24
Bernal Heights	402.89	394.27	435.97	428.68
St. Germain	27.79	-0-	-0-	-0-
General	869.27	818.10	858.29	813.27
	$ 84,500.43	$ 72,345.62	$ 71,276.28	$ 64,199.82
TOTAL INSIDE OF SAN FRANCISCO	$181,100.96	$ 181,617.59	$168,215.97	$ 166,698.25
OUTSIDE OF SAN FRANCISCO:				
Baden	$ 3,854.98	$ 1,505.96	$ 1,841.01	$ 1,697.06
Crystal Springs Pump	134,732.10	139,749.97	118,470.95	109,663.69
Bay Division Pump	2,108.75	2,601.63	828.76	268.41
Pleasanton Pump	7,405.88	18,051.10	3,858.36	3,398.84
Pleasanton Township Water District	2,039.70	3,549.09	723.70	514.24
Irvington Pump	24,744.97	48,425.27	28,305.17	23,392.82
TOTAL OUTSIDE OF SAN FRANCISCO.	$174,886.38	$ 213,883.02	$ 154,027.95	$ 138,925.06
TOTAL PUMPING EXPENSES	$355,987.34	$ 395,500.61	$ 322,243.92	$ 305,623.31

PUBLIC UTILITIES COMMISSION
SAN FRANCISCO WATER DEPARTMENT

SCHEDULE NO. 3

OPERATING EXPENSES

PURIFICATION EXPENSES	1947-1948	1948-1949	1949-1950	1950-1951
INSIDE OF SAN FRANCISCO:				
Francisco Street	$	$	$	$ 130.27
College Hill	1,387.69	1,302.03	1,819.30	1,238.60
Lake Honda	14.54	234.93	67.46	337.06
Lombard Street	289.06	259.45	178.32	143.65
Sunset	161.08	220.95	266.84	308.53
University Mound	751.60	1,050.52	1,455.84	1,241.81
Lake Merced	442.49	1.06	-0-	-0-
TOTAL INSIDE OF SAN FRANCISCO	$3,046.46	$ 3,068.94	$ 3,787.76	$ 3,399.92
OUTSIDE OF SAN FRANCISCO:				
Rock River Lime Plant				$ 6,953.64
San Andres Reservoir	$5,937.73	$ 6,320.66	$ 8,180.35	9,071.75
Crystal Springs Reservoir	13,900.84	6,031.67	6,910.53	14,818.12
Calaveras Reservoir	15,667.98	13,910.53	14,282.42	11,065.57
Sunol Purification System	1,461.99	2,176.73	1,217.37	1,566.33
Other Outside Stations	441.49	105.30	1,027.82	1,176.86
Coast Range Division, H.H.W.S.	23,266.78	24,474.68	22,529.72	24,242.16
Millbrae Laboratory	37,203.89	46,259.30	45,038.98	40,085.16
TOTAL OUTSIDE OF SAN FRANCISCO	$ 97,880.70	$ 99,278.87	$ 99,187.19	$ 108,979.59
TOTAL PURIFICATION EXPENSES	$100,927.16	$102,347.81	$ 102,974.95	$ 112,379.51

PUBLIC UTILITIES COMMISSION
SAN FRANCISCO WATER DEPARTMENT

SCHEDULE NO. 4

OPERATING EXPENSES

TRANSMISSION AND DISTRIBUTION	1947-1948	1948-1949	1949-1950	1950-1951
INSIDE OF SAN FRANCISCO:				
City Transmission Lines	$ 5,614.17	$ 6,827.17	$ 9,784.33	$ 4,295.46
Reconstruct and Relocate Pipe Lines	1,085.09	52,793.19	37,414.66	11,719.33
City Distribution Reservoirs	46,816.16	47,299.90	49,609.93	45,971.50
Meter Expenses	65,589.71	67,768.68	102,547.77	123,622.07
Street Department Expenses	23,045.85	25,964.76	27,651.49	24,453.55
Main Repairs	123,342.90	104,690.73	130,005.28	132,951.50
Service Connection Repairs	123,552.34	146,207.17	123,569.52	121,511.69
Repairs to Buildings and Equipment	9,265.49	5,604.04	3,124.06	3,430.02
Operation of Corporation Yard	14,541.72	16,356.98	13,114.25	8,553.97
Consumers' Premises Expenses	27,146.67	27,890.55	31,449.70	47,116.09
Superintendence	54,335.64	59,593.23	69,238.53	64,024.92
TOTAL INSIDE SAN FRANCISCO	$ 494,335.74	$ 560,996.40	$597,509.52	$ 587,650.10
OUTSIDE OF SAN FRANCISCO:				
Alameda Supply Line - Alameda Division	$ 1,271.90	$ 2,116.65	$ 1,067.58	$ 270.07
Alameda Supply Line - Peninsula Division	482.35	871.17	-0-	-0-
Alameda Transmission Line	9,041.15	16,543.94	3,903.20	4,367.01
Sunset Transmission Line		74.55	1,522.49	1,670.15
Crystal Springs Pump A ueduct	5,042.09	10,400.85	7,092.21	11,268.50
New Crystal Springs Transmission Line	6,765.35	9,242.38	13,518.04	942.19
Old Crystal Springs Transmission Line	7,986.73	7,012.02	20,173.44	4,189.49
San Andres Transm. Line #1, to College Hill	5,476.16	6,152.82	14,418.85	5,872.18
do- #2, to Lake Honda	6,384.14	3,648.66	4,066.05	2,740.44
do- #3, to Merced Manor	3,097.96	1,382.58	2,597.64	1,589.85
Palo Alto Pipe Line	15.11	34.51	64.48	131.20
Niles Regulating Reservoir	3,682.20	3,499.30	4,819.71	3,081.96
Pleasanton Transmission Line	1,511.77	163.87	19.74	260.68
Meter Expense, Peninsula Division	14,555.59	16,110.03	20,345.23	16,225.02
Meter Expense, Alameda Division	223.20	961.03	274.16	354.17
TOTAL OUTSIDE OF SAN FRANCISCO	$ 65,535.70	$ 78,214.36	$ 93,882.82	$ 52,962.91
TOTAL TRANSMISSION AND DISTRIBUTION EXPENSES	$ 559,871.44	$ 639,210.76	$691,392.34	$ 640,613.01

SCHEDULE NO. [illegible]

SAN FRANCISCO WATER DEPARTMENT

ADDITIONS, BETTERMENTS AND REPLACEMENTS

JUNE 30, 1951

A/c No.	Contract No.	Name	Retirements	Additions	Engineering: Office	Engineering: Field	Force Account	Contracts	Material and Supplies	Contractual Service	Equipment	Miscellaneous
1015		LANDED CAPITAL:										
		Purchase of Land and Easements		122,170.63								122,170.63
		Sale of Land	151,022.36									
1020		BUILDINGS- STRUCTURES AND GROUNDS:										
		Experimental Filtration Plant, C.S.		6,661.57	1,305.10			7,049.76	57.96		248.75	
		Lime Treatment Plant		87,069.45	6,660.61	4,499.78		63,708.18		1,983.37	12,217.51	
		Stand-by Pump Station- San Andreas #2		499.11			499.11					
				$ 98,230.13	$7,965.71	$4,499.78	$ 499.11	$70,757.94	$ 57.96	$1,983.37	$ 12,466.26	
1025		SOURCE OF SUPPLY:										
		Pleasanton Wells	$ 1,480.53									
1030		PUMPING STATION EQUIPMENT:										
		Crystal Springs Pumps		$ 8,230.40							$ 8,230.40	
1035		PURIFICATION EQUIPMENT:										
		Chlorine Mechanism Sunset Resvr.		440.71			440.71					
		Millbrae Laboratory	183.90	2,233.69							2,233.69	
			$ 183.90	$ 2,674.40			$ 440.71				$ 2,233.69	
1040		TRANSMISSION AND DISTRIBUTION:										
		Cast Iron Mains under $2,000.	$	$ 62,194.34	$	$	$62,194.34	$				
		Cast Iron Mains over $2,000.	22,126.06	229,759.01		5,168.80	20,366.47	101,465.04	$ 102,758.70			
		Install Meters		88,528.07			88,528.07					
		Install Services	8,166.30	127,082.75			127,082.75					
		Cut in Gate Valves		5,557.27			5,557.27					
		Cut in Gate Valves- West. Addt.		13,490.57			13,490.57					
	540	Potrero Heights Reservoir		10,147.19	963.48			9,183.71				
	548	Relino Brick Tunnel, Univ.Md.Resvr.		2,813.01			750.01	2,063.00				
		Refund AnzaVista Sub-Division	1,011.96									
			$ 31,304.32	$ 539,572.21	$ 963.48	$5,168.80	$317,969.43	$112,711.75	$ 102,758.70			
1045		GENERAL EQUIPMENT	1,272.93	11,470.55							$11,470.55	
1046		AUTOMOTIVE EQUIPMENT	21,581.64	39,045.62							39,045.62	
		TOTAL FOR YEAR 1950-1951	$ 207,645.68	$ 821,393.94	$8,929.19	$ 9,668.58	$318,909.30	$183,469.69	$102,816.66	$1,983.37	$73,446.52	$ 122,170.63

SCHEDULE NO. 6
AGRICULTURAL DIVISION
RECEIPTS AND EXPENSES

	1946-1947	1947-1948	1948-1949	1949-1950	1950-1951
RECEIPTS, AGRICULTURAL:					
Rentals - Cattle Leases	$ 45,227.57	$ 57,014.42	$ 90,889.37	$ 71,181.69	$ 87,426.32
Rentals - Flat Rates	9,455.46	10,652.41	14,233.97	14,542.75	31,766.66
Rentals - Share Crops	18,113.57	21,550.79	21,148.73	23,384.95	12,191.19
RECEIPTS, NON-AGRICULTURAL:					
Rentals - Flat Rates	10,182.60	11,781.73	9,935.52	9,578.31	11,071.28
Taxes Paid by Tenants	236.04	840.02	200.77	-0-	-0-
Royalties	20,827.78	28,585.86	24,277.24	11,920.68	21,802.94
Sales of Walnuts	73,017.57	16,700.11	39,896.52	25,546.71	28,232.56
Miscellaneous	3,646.79	5,588.48	11,597.79	9,392.53	7,237.64
TOTAL GROSS INCOME	$ 180,707.38	$ 152,713.82	$ 212,179.91	$ 165,547.62	$199,728.59
EXPENSES:					
Administrative and Superintendence	$ 12,210.07	$ 13,461.14	$ 16,757.00	$ 16,365.83	$ 15,644.10
Miscellaneous Office Supplies & Expenses	432.04	237.89	212.82	96.36	535.70
Automotive Service	760.44	1,038.67	1,244.53	1,080.66	1,433.64
Share Crops:					
Storage Insurance, Handling, Freight	1,010.07	511.14	505.56	474.70	246.03
Care of Properties: Repairs -					
Buildings, Structures and Grounds	3,828.55	4,647.47	3,144.52	1,778.73	4,502.55
Walnut Orchard:					
Care of Orchard	13,128.67	12,829.99	14,043.07	14,319.72	12,104.60
Crop Harvest	17,380.72	6,070.65	13,205.65	8,891.06	8,415.99
Packing House and Selling Expense					1,564.51
NET OPERATING EXPENSE	$ 48,750.56	$ 38,796.95	$ 49,113.15	$ 43,007.06	$ 44,447.12
NET INCOME	$ 131,956.82	$ 113,916.87	$ 163,066.76	$122,540.56	$155,281.47

PUBLIC UTILITIES COMMISSION
SAN FRANCISCO WATER DEPARTMENT

SCHEDULE NO. 11

OPERATING EXPENSES 1950-1951

CITY DISTRIBUTION DIVISION - PUMPING STATION ACCOUNT

STEAM PUMPS:	Labor	Use of Equipment	Material and Supplies	Fuel or Power	Contractual Service	Total
Central	$52,625.62	$ 31.60	$ 956.60	$ 48,382.66	$	$ 101,996.48
City	4.75	.80	6.67			12.22
Clarendon Heights	485.01	3.99	.73			489.73
	$53,115.38	$ 36.39	$ 964.00	$ 48,382.66		$ 102,498.43
ELECTRIC PUMPS:						
Alemany	$ 4,808.33	$ 49.97	$ 208.39	$ 28,854.67	$	$ 33,921.36
Bay Bridge - Treasure Island	362.75	44.50	42.60	6,484.85	48.00	6,982.70
Bernal Heights	312.00	22.30	10.34	84.04		428.68
Fairview	378.03	28.00	53.60	190.39		650.02
Forest Hills	674.00	64.57	100.57	7,219.97	38.50	8,097.61
Francisco Street	330.92	51.10	9.83	2,874.84		3,266.69
Lake Honda	276.00	11.10				287.10
Lincoln Park	294.00	32.60	1.17	400.69		728.46
Newcomb Avenue	414.95	51.10	15.82	5,319.46		5,801.33
Olmstead & University	384.46	31.80	7.10	491.88		915.24
Palo Alto	234.25	20.90		17.67		272.82
Potrero Heights	252.10	19.30	.86	203.36		475.62
Sunset Booster	448.69	5.36	.59			454.64
Sunset Source						
Twin Peaks	702.08	60.50	69.98	271.72		1,104.28
General	422.82	16.39	248.97	2.90	122.19	813.27
	$10,295.38	$ 509.49	$ 769.82	$ 52,416.44	$ 208.69	$ 64,199.82
TOTAL INSIDE SAN FRANCISCO	$63,410.76	$ 545.88	$1,733.82	$ 100,799.10	$ 208.69	$166,698.25

PUBLIC UTILITIES COMMISSION
SAN FRANCISCO WATER DEPARTMENT

SCHEDULE NO. 12

OPERATING EXPENSES - 1950-1951
CITY DISTRIBUTION DIVISION

SOURCE OF SUPPLY:	Labor	Use of Equipment	Material & Supplies	Contractual Service	Paving	Miscellaneous	Total
Lake Merced	$ 4,337.83	$ 15.20	$ 114.58	$ 47.18	$	$	$ 4,514.79
PURIFICATION:							
Lake Merced							-0-
College Hill	156.75	13.12	910.83	157.90			1,238.60
Sunset Reservoir	71.70	2.40	222.43	12.00			308.53
University Mound	76.70	16.70	1,020.74	127.67			1,241.81
Lombard	60.16	1.97	80.73	.79			143.65
Lake Honda	304.84	12.80	19.42				337.06
Francisco Street	72.96	4.00	52.54	.77			130.27
TOTAL	$ 743.11	$ 50.99	$ 2,306.69	$ 299.13			$ 3,399.92
TRANSMISSION AND DISTRIBUTION:							
City Transmission Lines	$ 3,476.26	$ 383.36	$ 205.09	$ 574.39		$ -343.64	$ 4,295.46
City Reservoirs	41,415.26	1,219.10	1,773.19	1,585.25		- 21.30	45,972.50
Meter Expense	43,788.83	1,278.82	52,015.32	652.38	25,644.79	241.93	123,622.07
Street Department Expense	23,775.27	658.00	18.13	2.15			24,453.55
Operation of Corporation Yard	5,502.63	265.50	1,079.00	1,406.84	300.00		8,553.97
Superintendence	61,909.34	1,310.01	279.09	427.15		99.33	64,024.92
Consumers' Premises Expenses	43,619.38	3,247.13	42.33	207.25			47,116.09
Repairs - Distribution Mains	102,934.89	8,135.84	12,328.08	765.69	8,620.93	166.07	132,951.50
Repairs - Service Connections	85,730.01	7,819.41	11,424.84	675.10	12,396.11	3,466.22	121,511.69
Repairs - Building and Equipment	2,667.86	15.18	745.98	1.00			3,430.02
Reconstruct and Relocate Pipe Lines	8,035.22	860.70	2,442.15	381.26			11,719.33
	$ 422,854.95	$ 25,193.05	$ 82,353.20	$ 6,678.46	$ 46,961.83	$ 3,608.61	$ 587,650.10
TOTAL CITY DISTRIBUTION DIVISION	$ 427,935.89	$ 25,259.24	$ 84,774.47	$ 7,024.77	$ 46,961.83	$ 3,608.61	$ 595,564.81

PUBLIC UTILITIES COMMISSION
SAN FRANCISCO WATER DEPARTMENT

SCHEDULE NO.13
OPERATING EXPENSES-1950-51
OUTSIDE SAN FRANCISCO

SOURCE OF SUPPLY	Labor	Use of Equipment	Material & Supplies	Contractual Services	Miscellaneous	Total
SURFACE SOURCES:						
San Andres Reservoir	$ 17,768.87	$ 1,200.91	$ 2,246.87	$ 804.41	$	$22,021.06
Crystal Springs Reservoir	38,371.74	5,955.98	5,541.60	1,581.85	66.86	51,518.03
Pilarcitos Reservoir	20,559.33	2,606.35	3,331.60	322.08	33.52	26,852.88
Calaveras Reservoir	9,301.91	206.57	419.85	823.87		10,752.20
TOTAL	$ 86,001.85	$ 9,969.81	$ 11,539.92	$ 3,532.21	$ 100.38	$111,144.17
GROUND SOURCES:						
Sunol Filter Beds	$ 9,186.76	$ 134.54	$ 1,113.83	$ 792.37	$	$ 11,227.50
Pleasanton Wells	107.06	19.05		2,009.53		2,135.64
TOTAL	$ 9,293.82	$ 153.59	$ 1,113.83	$ 2,801.90		$ 13,363.14
SUPPLY LINES:						
Bay Division Pipe Line (Penin.Div.)	$ 14,625.62	$ 1,241.99	$ 1,087.96	$ 561.82	$ 26.38	$ 17,543.77
Stone Dam Aqueduct	3,228.15	216.89	24.28	46.00		3,515.32
Niles - Irvington Pipe Line	4,532.03	644.43	138.15			5,314.61
Bay Division Pipe Line (Alameda Div.)	4,307.49	1,508.00	138.57	44.92		5,998.98
Other Supply Lines and Aqueducts (Peninsula Division)	3,316.59	107.20	444.32	42,156.01		46,024.12
Other Supply Lines (Alameda Divn.)	3,690.58	343.11	119.89	3.59		4,157.17
TOTAL	$33,700.46	$ 4,061.62	$ 1,953.17	$ 42,812.34	$ 26.38	$ 82,553.97
GENERAL EXPENSES:						
Alameda System	$23,458.66	$ 2,550.11	$ 783.97	$ 347.05	$	$ 27,139.79
Peninsula System	68,697.01	1,777.16	4,933.75	2,727.84	14.88	78,150.64
TOTAL	$92,155.67	$ 4,327.27	$ 5,717.72	$ 3,074.89	$ 14.88	$105,290.43
TOTAL SOURCE OF SUPPLY	$221,151.80	$ 18,512.29	$ 20,324.64	$ 52,221.34	$ 141.64	$312,351.71

PUBLIC UTILITIES COMMISSION
SAN FRANCISCO WATER DEPARTMENT

SCHEDULE NO. 14
OPERATING EXPENSES - 1950-1951
OUTSIDE OF SAN FRANCISCO

PUMPING STATIONS	Labor	Use of Equipment	Material and Supplies	Fuel or Power	Contractual Service	Miscellaneous	Total
Baden Pump	$ 1,424.37	$ 63.00	$ 105.44	$ 76.25	$ 28.00	$	$ 1,697.06
Crystal Springs Pump	18,034.70	1,276.85	546.48	88,923.95	881.71		109,663.69
Bay Division Pump			3.59	264.82			268.41
Pleasanton Pump	1,068.44	24.95	26.88	2,227.92	20.65		3,388.84
Pleasanton Township Water District	7.53	2.11		503.98	.62		514.24
Irvington Pump	4,361.85	218.84	51.26	17,906.68	854.19		23,392.82
OUTSIDE PUMPING EXPENSES	$24,916.89	$ 1,585.75	$ 733.65	$109,903.60	$ 1,785.17		$ 138,925.06
PURIFICATION							
San Andres Reservoir	$ 1,837.20	$ 387.78	$ 5,705.05	$	$ 1,342.85		$ 9,272.88
Crystal Springs Reservoir	3,421.84	1,193.45	9,793.70		409.13		14,818.12
Calaveras Reservoir	2,059.44	683.89	7,699.42		622.82		11,065.57
Sunol Purification Station	653.40	44.20	863.73		5.00		1,566.33
Other Outside Stations	31.00	1.35	132.66		20.00	15.53	200.54
Coast Range Division - HHWS	1,357.40	1,729.46	19,861.00		2,069.49		25,017.35
Lime Treatment Plant			6,502.69		450.95		6,953.64
Millbrae Laboratory	31,293.10	3,741.18	1,691.87		3,359.01		40,085.16
OUTSIDE PURIFICATION EXPENSES	$ 40,653.38	$ 7,781.31	$ 52,250.12		$ 8,279.25	$ 15.53	$ 108,979.59
TRANSMISSION AND DISTRIBUTION							
PENINSULA DIVISION							
Alameda Transmission Line	$ 3,691.64	$ 237.71	$ 387.96		$ 49.70		$ 4,367.01
Crystal Springs Aqueduct	9,791.21	378.56	935.13		163.60		11,268.50
Crystal Springs Aqueduct (New)	808.94	72.00	44.45		16.80		942.19
Crystal Springs Aqueduct (Old)	3,653.77	187.16	294.23		54.33		4,189.49
San Andres Transmission Line #1 to College Hill	4,583.95	234.92	934.81		118.50		5,872.18
San Andres Transmission Line #2 to Lake Honda	2,546.37	60.30	144.25		37.20	-47.68	2,740.44
San Andres Transmission Line #3 to Merced Manor	1,505.40	43.66			40.79		1,589.85
Sunset Transmission Line	1,250.12	89.55	301.68		28.80		1,670.15
Palo Alto Pipe Line	129.60				1.60		131.20
Repairs- Distribution Mains & Service	125.49	6.00	10.80			26.42	168.71
Meter Expense	10,640.40	2,164.97	3,004.64		246.30		16,056.31
TOTAL PENINSULA DIVISION EXPENSE	$38,726.89	$ 3,474.83	$ 6,057.95		$ 757.62	$ - 21.26	$ 48,996.03
ALAMEDA DIVISION							
Niles Regulating Reservoir	$ 2,997.08	$ 15.55	$ 29.96		$ 39.37		$ 3,081.96
Alameda Supply Line		270.07					270.07
Pleasanton Transmission Line	221.72	29.90	5.06		4.00		260.68
Meter Expense	267.97	74.85			11.35		354.17
TOTAL ALAMEDA DIVISION EXPENSE	$ 3,486.77	$ 390.37	$ 35.02		$ 54.72		$ 3,966.88
TOTAL TRANSMISSION AND DISTRIBUTION EXPENSES OUTSIDE SAN FRANCISCO	$42,213.66	$ 3,865.20	$ 6,092.97		$ 812.34	$ - 21.26	$ 52,962.91

CHARGES OF NON-PAYING MUNICIPAL ACCOUNTS
FOR THE FISCAL YEARS 1949-1950 and 1950-1951

	1949-1950	1950-1951	INCREASE	DECREASE
Hydrants	$ 250,600.00	$ 252,545.10	$ 1,945.10	$
Auxiliary Fire System	16,737.99	17,925.20	1,187.21	
Fire Boats	530.46	495.72		34.74
Fire Department	8,115.25	8,099.09		16.16
Police Department	4,332.64	4,924.26	591.62	
Parks	138,462.90	118,892.83		19,570.07
Golden Gate Park - Proper	50,254.17	40,600.74		9,653.43
Playgrounds	33,243.30	33,757.69	514.39	
Libraries	1,933.05	1,873.13		59.92
Opera House & War Memorial Bldg.	2,052.18	2,304.54	252.36	
" " " " " "	879.76	899.30	19.54	
" " " " " "	36.00	36.00		
Memorial Museum-Station M-Golden Gate Park Fulton & 10th Ave.	398.43	460.39	61.96	
Curator-Palace of Legion of Honor-Lincoln Park-Clement & 39th Ave.	262.47	256.56		5.91
Academy of Sciences	31.96	48.50	16.54	
Aquarium	1,629.87	3,498.60	1,868.73	
Steinhart Aquarium	1,278.30	4.85		1,273.45
Juvenile Court and Detention Home	1,059.24	349.47		709.77
Youth Guidance Center		2,094.53	2,094.53	
Adult Guidance Center		31.40	31.40	
Purchaser of Supplies	309.07	301.87		7.20
Exposition Auditorium	941.48	1,130.05	188.57	
Retirement Board	211.87	194.05		17.82
City Planning Commission	184.79	160.28		24.51
Dept. of Public Works (Public Bldgs.)	12,893.11	17,813.77	4,920.66	
" " " " (Street Cleaning)	10,134.70	10,824.49	689.79	
" " " " (Street Work & Sewers)	398.03	271.93		126.10
" " " " (Parked Areas Pub.Sts.)	5,987.18	5,647.48		339.70
Troughs	63.89	41.38		22.51
County Jail	17,668.64	18,596.39	927.75	
Dept. of Electricity-General Alarm Station	330.09	199.39		130.70
Dept. of Public Health	23,060.76	21,906.00		1,154.76
" " " "	1,564.50	1,625.59	61.09	
Relief Home	17,913.90	17,187.83		726.07
Hassler Health Farm	6,155.85	6,619.38	463.53	
Public Welfare Department	368.48	336.47		32.01
Registrar of Voters	85.93	81.67		4.26
Municipal Railway	8,902.48	8,364.21		538.27
" " (Track Repairs)	5.50	18.40	12.90	
Municipal Airport	4,826.18	3,491.70		1,334.48
	$ 623,844.40	$ 603,910.23	$ 15,847.67	$ 35,781.84
	Net Decrease			$ 19,934.17

CHARGES OF PAYING MUNICIPAL ACCOUNTS
FOR THE FISCAL YEARS 1949-1950 & 1950-1951

	1949-1950	1950-1951	DECREASE
SCHOOLS	$ 57,120.12	$ 54,243.55	$ 2,876.57
TOTALS	$ 57,120.12	$ 54,243.55	$ 2,876.57

APPENDIX

TO

REPORT OF SAN FRANCISCO WATER DEPARTMENT

TABLE	DESCRIPTION
1	San Francisco Rainfall
2	Rainfall - Watershed Stations
3	Reservoir Storage
4	Water Drawn from Hetch Hetchy and Auxiliary Sources
5	Source of Water Conveyed Across San Francisco Bay
6	Water Delivered Through Pipe Lines
7	Water Delivered at the Consumer's Meters
8	Average Daily Water Consumption Since 1865
9	Average Daily Consumption by Districts
10	Peak Day Consumption by Districts
11	Meters in Service, San Francisco District
12	Meters in Service, Suburban District
13	Official Meter Tests
14	Unit Cost for Meter Maintenance
15	Unit Cost of Meter Installation
16	Unit Cost of Service Connection
17	Street Main Taps and Service,Connection Record
18	Comparative Pumping Costs
19	Record of "Bad Water" Complaints
20	Record of Water Complaints
21	Pipe Records, City Distribution System
22	Valve Records, City Distribution System
23	Contract Data

TABLE NO. 1

SAN FRANCISCO RAINFALL

(U.S. Weather Bureau Records)

Month	Season 1947-48 inches	Season 1948-49 inches	Season 1949-50 inches	Season 1950-51 inches	Normal 1950-51 inches
July	0	.02	.06	0	.02
August	0	.02	.04	0	.01
September	0	.09	0	0	.45
October	2.42	.20	.08	2.72	1.12
November	1.06	1.18	1.18	4.96	2.35
December	1.84	4.75	2.77	6.01	3.95
January	1.00	2.20	7.40	4.41	4.54
February	2.32	3.04	2.33	3.00	3.85
March	3.36	5.85	1.65	1.32	3.14
April	3.04	0	.87	.89	1.61
May	.54	.93	.37	.65	.80
June	.01	0	.03	.04	.18
Totals	15.59	18.28	16.78	24.00	22.02

1950-51 Season 109.0% of Normal.

TABLE NO. 2

RAINFALL - WATERSHED STATIONS

(Water Department Records)

Station	Season 1947-48 inches	Season 1948-49 inches	Season 1949-50 inches	Season 1950-51 inches	Normal 1950-51 inches
San Francisco	15.59	18.28	16.78	24.00	22.02
Pilarcitos	34.35	35.33	39.38	54.11	45.36
San Andres	24.21	26.43	27.79	35.33	37.41
Crystal Springs-Upper	20.92	21.88	24.26	30.64	32.22
Crystal Springs-Lower	18.66	21.90	24.36	31.61	27.65
Crystal Springs-Cottage	21.42	23.87	24.69	31.78	26.89
Lake Merced	15.90	18.91	18.06	24.51	21.37
Pleasanton	15.30	14.12	16.37	23.25	21.10
Calaveras	17.56	13.64	17.01	30.07	24.08
Sunol	15.18	13.79	16.21	23.96	20.49
Niles	14.50	13.40	14.98	20.86	19.73
Hetch Hetchy	33.06	25.84	30.03	49.54	33.99
Lake Eleanor	37.77	32.66	37.58	58.63	41.51
Moccasin	24.45	22.29	23.06	33.01	26.41

TABLE NO. 3

RESERVOIR STORAGE

(Exclusive of Hetch Hetchy Sources)

MILLION GALLONS

	1947-48		1948-49		1949-50		1950-51	
	Max. May 8	Min. June 30	Max. Apr.6	Min. Dec.25	Max. Apr.16	Min. Jan. 6	Max. Apr.7	Min. Nov.15
Calaveras	5,111	4,562	8,412	70	9,630	336	29,576	3,840
Crystal Springs	16,334	15,771	16,587	13,930	14,623	11,921	20,012	9,745
San Andres	6,143	5,859	5,905	5,041	5,886	5,561	5,174	5,248
Pilarcitos	875	684	747	519	853	506	885	570
Lake Merced	2,609	2,562	2,556	2,544	2,322	2,228	2,376	2,218
City Reservoirs	252	268	246	265	269	299	277	261
TOTALS	31,334	29,706	34,453	22,369	33,583	20,851	58,300	21,882

TABLE NO. 4

WATER DRAWN FROM HETCH HETCHY AND AUXILIARY SOURCES

MILLION GALLONS

	1947-48	1948-49	1949-50	1950-51
Hetch Hetchy Water Supply	22,840	22,464	20,785	28.236
Pleasanton Wells & Sunol Filters	2,180	4,426	1,819*	1,066
Sunset Wells	0	0	0	0
TOTALS	24,020	26,880	22,604	29,302

*No water was received from Pleasanton wells subsequent to April 1949.

TABLE NO. 5

SOURCE OF WATER CONVEYED ACROSS SAN FRANCISCO BAY
YEARLY AVERAGE, MILLION GALLONS DAILY

	1947-48	1948-49	1949-50	1950-51
Pleasanton Wells and Sunol Filters	5.9	12.1	5.0	2.9
Calaveras Reservoir	29.1	16.8	23.0	14.1
Hetch Hetchy Water Supply	61.8	61.5	56.9	77.2
Totals	96.8	90.5	84.9	94.2

TABLE NO. 6

WATER DELIVERED THROUGH PIPELINES

Water Transported into San Francisco Consumption Area (1950-51)

San Andres 54" Pipeline	33.3	M.G.D.
College Hill 30" Supply Line	7.5	"
Baden-Merced Branch 30" Pipeline	7.3	"
Crystal Springs 44" Pipeline	8.7	"
Crystal Springs 60" Pipeline	26.0	"
Sunset Supply 60" Pipeline	--	"
Total San Francisco consumption area	82.8	M.G.D.

Water Transported from Crystal Springs to San Andres Reservoir:

Crystal Springs Pump Aqueduct	29.2	M.G.D.

Water Transported across San Francisco Bay:

Bay Division 60" and 66" Pipelines	94.2	M.G.D.
Alameda 36" Pipeline	0.0	

TABLE NO. 7

WATER DELIVERED AT THE CONSUMERS METERS SAN FRANCISCO DISTRICT

	1947-48	1948-49	1949-50	1950-51
Average Active Accounts	138,644	141,460	143,388	145,302
Number on June 30th.	140,423	142,497	144,279	146,326
Metered Delivery (M.C.F.)				
Residential	1,251.1	1,309.3	1,262.5	1,318.7
Com'l & Ind'l	1,964.4	1,920.9	1,853.2	1,892.1
Municipal - Actual	19.4	20.7	20.3	18.6
Municipal - Comparisons	198.5	200.8	215.7	189.2
Total (M.C.F.)	3,433.4	3,451.7	3,351.7	3,418.6
Average (M.G.D.)	70.5	70.9	68.9	70.2
Consumption Rec (M.G.D.)	81.3	83.3	83.1	82.8
Difference (M.G.D.)	10.8	12.4	14.2	12.6
Ratio	13.3%	14.9%	17.1%	15.2%

SUBURBAN DISTRICT

	1947-48	1948-49	1949-50	1950-51
Average Active Accounts	725	722	762	778
Number on June 30	720	724	801	755
Metered Delivery - (M.C.F.)				
Regular Rates	1010.5	1150.7	1203.4	1329.0
Contract Rates	36.8	40.1	39.1	39.2
Free Deliveries (Rip.Contract)	22.9	23.0	25.1	27.0
Total (M.C.F.)	1070.2	1213.8	1267.6	1395.2
Average (M.G.D.)	22.0	24.9	26.0	28.6
Consumption Rec. (M.G.D.)	19.7	19.9	19.6	23.0
Difference (M.G.D.)	2.3	5.0	6.4	5.6
Ratio	11.2%	25.1%	32.7%	24.3%

TABLE NO. 8

AVERAGE DAILY CONSUMPTION SINCE 1865
CONSUMPTION IN MILLION GALLONS PER DAY

Venturi Meter Records

YEAR	M.G.D.	YEAR	M.G.D.	YEAR	M.G.D.	YEAR	M.G.D
1865	2.4	1885	17.0	1905	34.9	1925	42.6
1870	6.0	1890	20.4	1910	35.6	1928	50.1
1875	11.7	1895	19.9	1915	42.6	1929	52.1
1880	12.7	1900	25.5	1920	36.2	1930	52.1

Note: At noon on March 3, 1930 the San Francisco Water Department acquired title to the operative properties of the Spring Valley Water Company

Year	San Francisco	Sub-urban	Total System	Max. Day	Min. Day	Max. Month	Min. Month
1930-31	49.2	3.1	52.3	66.7	41.3	57.8	47.0
1931-32	49.3	2.8	52.1	65.6	39.6	59.4	47.5
1932-33	46.4	2.7	49.1	60.4	39.9	54.3	44.6
1933-34	47.3	2.6	49.9	64.3	39.1	53.7	45.1
1934-35	48.1	2.4	50.5	65.4	1.3	58.1	46.2
1935-36	52.3	2.5	54.8	68.0	43.0	62.1	50.3
1936-37	55.1	3.4	58.5	70.7	45.7	63.8	51.8
1937-38	53.3	5.0	58.3	72.4	46.7	65.4	53.4
1938-39	56.2	6.4	62.6	84.6	48.5	77.5	54.8
1939-40	59.6	9.0	68.6	89.5	51.6	76.6	60.9
1940-41	60.7	7.3	68.0	90.0	52.0	77.9	60.6
1941-42	63.5	7.7	71.2	94.5	53.1	85.7	61.7
1942-43	69.2	8.6	77.8	106.9	60.2	92.3	68.6
1943-44	76.1	11.4	87.5	109.9	70.4	101.1	76.8
1944-45	79.0	17.9	96.9	134.9	74.7	116.5	85.2
1945-46	83.7	17.2	100.9	131.9	72.9	115.3	88.0
1946-47	83.3	18.6	101.9	135.6	76.5	117.0	86.2
1947-48	81.3	19.7	101.0	138.3	74.2	122.6	88.0
1948-49	83.3	19.9	103.2	138.3	73.3	124.4	86.4
1949-50	83.1	19.6	102.7	139.1	73.8	120.7	88.0
1950-51	82.8	23.0	105.8	147.7	77.3	126.1	88.6

NOTE: Water Department deliveries for consumption in the major inhabited portion of the northerly 47 square miles of San Mateo County are included in the figures in column headed "San Francisco" and are not included in the figures in column headed "Suburban" in Table No. 8.

TABLE NO. 9

AVERAGE DAILY CONSUMPTION BY DISTRICTS

GALLONS

District	1950-1951	1949-1950	Increase or Decrease	% Inc. or Dec.
Forest Hill	631,419	690,932	- 59,513	- 8.6
Stanford Heights	11,230,863	10,995,112	+ 235,751	+ 2.1
Sunset-Lake Honda	32,122,671	34,794,025	-2,671,354	- 7.7
College Hill	8,905,573	8,007,627	+ 897,946	+11.2
University Mound	28,109,361	26,997,592	+1,111,769	+ 4.1
*Merced Manor	1,799,992	1,634,928	+ 165,064	+10.1
Total City	82,799,879	83,120,216	- 320,337	- 0.4
Suburban	22,999,584	19,598,315	+3,401,269	+17.4
Total Entire System	105,799,463	102,718,531	+3,080,932	+ 3.0

*Merced Manor consumption not measured directly: any inaccuracies would reflect in suburban and College Hill consumption.

TABLE NO. 10

PEAK DAY CONSUMPTION BY DISTRICTS

GALLONS

District	1950-1951	1949-1950	1948-1949
Forest Hill	1,152,000	1,256,000	1,327,000
Stanford Heights	14,149,000	13,789,000	14,859,000
Sunset-Lake Honda	43,205,000	43,669,000	44,848,000
College Hill	11,523,000	11,481,000	11,035,000
University Mound	40,511,000	35,126,000	40,372,000
Merced Manor	2,598,000	2,914,000	3,060,000
Total City	104,945,000	102,574,000	106,240,000
Suburban	47,070,000	41,423,000	37,747,000
Total System	147,734,000	139,051,000	138,270,000

TABLE NO. 11

METERS IN SERVICE - SAN FRANCISCO DISTRICT
AS OF JUNE 30, 1951

CLASS OF CONSUMER	5/8"	3/4"	1"	1½"	2"	3"	4"	6"	8"	12"	Total
REVENUE AND NON-REVENUE PRODUCING AS OF JUNE 30, 1951											
REVENUE PRODUCING											
Commercial	21,522	985	1,970	2,203	3,245	11	42	224	220	1	30,423
Residential	115,800	224	842	244	11						117,121
Docks & Ship	150	6	35	53	90	1			1	2	338
Total	137,472	1,215	2,847	2,500	3,346	12	42	224	221	3	147,882
NON-REVENUE PRODUCING											
Commercial	886	8	19	12	27		1	4	6		963
Residential	948		3	3							954
Dock & ship						3					3
Total	1,834	8	22	15	27	3	1	4	6		1,920
TOTAL METERS INSTALLED	139,306	1,223	2,869	2,515	3,373	15	43	228	227	3	149,802

Total Meters in Service as of June 30, 1951		149,802
Less: Extra Meters in 805 Batteries. (2,288 meters - 805)	1483	
Less: Extra Meters in 41 consolidations (114 meters - 41)	73	
Non-Revenue Meters (Temporarily shut off)	1920	3,476
Number of Active Accounts as of June 30, 1951		146,326

NOTE: The above meter count includes 444 Automatic Sprinklers for fire purposes.

PREVIOUS RECORDS:	1946-47	1947-48	1948-49	1949-50	1950-51
Total Meters	139,690	143,388	145,779	147,704	149,802
Increase	3,141	3,698	2,391	1,925	2,098
Idle Meters	1,512	1,685	1,858	1,916	1,920

TABLE NO. 12

METERS IN SERVICE - SUBURBAN DISTRICT

CLASS OF CONSUMERS	5/8"	3/4"	1"	1½"	2"	4"	6"	8"	10"	Total
REVENUE AND NON-REVENUE PRODUCING AS OF JUNE 30, 1951										
REVENUE PRODUCING										
Under Regular Rates	511	26	52	33	299	16	49	26	3	1,015
" Spec. Contracts	4		1	1	29					35
Total	515	26	53	34	328	16	49	26	3	1,050
NON-REVENUE PRODUCING										
Under Regular Rates	15	3	2		3			2		25
Total	15	3	2		3			2		25
TOTAL METERS INSTALLED	530	29	55	34	331	16	49	28	3	1,075

Total Meters in service as of June 30, 1951	1,075
Less: Meters in excess of accounts - 293	320
Less: Non-Revenue Producing Meters - 27	320
Number of Active Suburban Accounts June 30, 1951	755

COMPARISONS RECORD	5/8"	3/4"	1"	1½"	2"	4"	6"	8"	10"	Total
Record June 30, 1948										
Revenue Producing	513	26	55	37	312	13	38	8	2	1,004
Non-Producing	17	1	1							19
Total	530	27	56	37	312	13	38	8	2	1,023
Record June 30, 1949										
Revenue Producing	507	24	52	37	325	13	41	10	2	1,011
Non Producing	20	5	4							29
Total	527	29	56	37	325	13	41	10	2	1,040
Record June 30, 1950										
Revenue Producing	522	26	51	34	359	15	46	18	2	1,073
Non-Producing	9	2	6		4					21
Total	531	28	57	34	363	15	46	18	2	1,094

TABLE NO. 13

OFFICIAL METER TESTS

During Fiscal Year Ending June 30, 1951

PERCENTAGE OF VARIATION

	0%	1%	2%	2.5%	3%	3.5%	4%	5%	12%	14%	Number Tested Total	Ratio
Fast		3	2	1			1				7	43.7%
Slow												
O.K.	9										9	56.3%
Total	9	3	2	1			1				16	100.0%

PREVIOUS TOTALS

Year	1947	5	7	1	2	1	1				17	
	1948	2	6	2		2					12	
	1949		8			1					9	
	1950	4	18	8	1	5		1			37	

Refunds 1950-51 Account of over-registration - $3.12
Increases " " " " under-registration - 0

TABLE NO. 14

UNIT COST FOR METER MAINTENANCE

Year	Meters in use	Total Cost	Cost per Meter	Labor Cost per Meter	Other Cost per Meter
1943-44	132,873	$44,264.92	0.33	0.220	0.110
1944-45	134,133	46,602.31	0.35	0.212	0.138
1945-46	136,549	41,576.76	0.30	0.179	0.121
1946-47	139,690	49,167.73	0.35	0.203	0.147
1947-48	143,288	65,589.71	0.46	0.260	0.200
1948-49	145,779	67,768.68	0.46	0.254	0.206
1949-50	147,704	102,547.77	0.69	0.323	0.367
1950-51	149,802	140,032.95	0.93	0.365	0.570

TABLE NO. 15

UNIT COST OF METER INSTALLATION

	1947-48	1948-49	1949-50	1950-51
Meters Set	3,917	3,098	2,890	3,078
Percent $\frac{3}{4}$"& smaller	92.2	89.8	82.1	85.3
Labor	$ 2.06	$ 4.16	$ 5.52	$ 3.20
Supervision	0.42	0.22	0.30	0.13
Meter	15.11	18.73	20.31	22.83
Material	3.90	4.43	5.63	3.51
Equipment	0.19	0.16	0.59	0.17
Paving	0.36	0.70	1.32	0.47
Miscellaneous	0.01	0.01	0.05	0.15
	$22,05	$28.42	$33.72	$30.46

TABLE NO. 16

UNIT COST OF SERVICE CONNECTION

	1947-48	1948-49	1949-50	1950-51
Services installed	3,231	2,279	2,708	2,357
Percent $\frac{3}{4}$ installed	91.1	86.4	87.9	81.7
Labor	$ 8.11	$16.50	19.77	$26.79
Supervision	1.66	0.77	0.92	1.06
Material	5.11	8.54	6.94	10.37
Equipment	1.22	1.80	2.24	3.18
Paving	2.93	6.61	5.77	10.06
Miscellaneous	0.39	0.02	0.01	0.24
	$19.42	$34.24	$35.65	$51.70

TABLE NO. 17

STREET MAIN TAPS AND SERVICE CONNECTIONS RECORD

San Francisco District — June 30, 1951

TAPS ON STREET MAINS

	Wharf	3/4"	1"	1½"	2"	3"	4"	6"	8"	12"	16"	TOTALS
June 30, 1950	297	156,579	4,299	3,276	2,357	729	361	333	226	13	2	168,472
ADD 1950-51	12	1,604	157	74	61	16	18	15	27	2		1,986
June 30, 1951	309	158,183	4,456	3,350	2,418	745	379	348	253	15	2	170,458

SERVICE CONNECTIONS

	Services connected to street mains, as above	170,458
ADD	"Distributors", being one or more add'l meters con. to service pipes	13,628
	TOTAL connections of record	184,086
DEDUCT	Disconnected services	35,840
	Net metered live services consisting of 147,882 active meters; less 1,556 extra meters in batteries, plus 1,920 services tempy S/O	148,246

Previous Records	1947-48	1948-49	1949-50
Active	141,703	143,921	145,788
Shut-Off	1,685	1,858	1,916
TOTALS	143,388	145,779	147,704
Less extra battery meters	1,280	1,424	1,509
NET	142,108	144,355	146,195

SERVICE INSTALLATIONS

Fiscal Year 1950-51

	Taps	Distributors	Totals
Richmond District	57	25	82
Sunset "	465	179	644
No.Mkt. & West. Add.	312	69	381
So.Mkt. & Tw. Peaks	1,137	145	1,282
Waterfront	12	-	12
TOTALS	1,983	418	2,401
Previous Years			
1947-48	3,365	641	4,006
1948-49	1,966	404	2,370
1949-50	2,266	339	2,605

AUTOMATIC SPRINKLER INSTALLATIONS

Oct. 26, 1932 to June 30, 1951

SIZE	1932-48	1948-49	1949-50	1950-51	Total	Installed prior to 10/26/32	GRAND TOTAL
4-inch	12	5	2	2	21		
6-inch	85	20	11	13	129		
8-inch	110	22	12	25	169		
12-inch	7	0	1	0	8		
TOTALS	214	47	26	40	327	163	490

TABLE NO 18

COMPARATIVE PUMPING COSTS

SAN ANDRES PUMP	1947-48	1948-49	1949-50	1950-51
Water Pumped, Gallons	14,631,070,000	13,701,830,000	12,644,870,000	12,669,413,000
Electric Power, KWH	14,275,200	13,420,800	12,780,800	11,264,000
Power Cost	$ 113,097.54	$ 114,103.66	$ 94,515.11	$ 88,923.95
Labor Cost	15,646.87	16,742.50	16,483.51	$ 18,034.70
Miscellaneous	5,987.69	8,861.33	7,472.33	$ 2,705.04
Totals	$ 134,732.10	$ 139,707.49	$ 118,470.95	$109,663.69
Cost per Million Gallons	9.21	10.20	9.37	10.28
" " " " per foot of lift	0.0413	0.0449	0.0416	0.0417

CENTRAL PUMP				
Water Pumped, Gallons	3,700,110,000	3,861,370,000	3,966,376,000	4,052,250,000
Gas burned, Cu. Ft.	99,135,200	13,931,200	15,345,700	17,297,800
Oil burned, Gallons	121,042	160,020	104,496	6,182
Electric Power, KWH	8,400	6,000	60,000	12,000
Fuel & Power Cost	$ 48,687.22	$ 57,807.07	$ 44,105.59	$ 48,382.66
Labor Cost	46,245.77	49,485.01	51,350.76	$ 52,625.62
Miscellaneous	993.36	1,410.79	2,099.10	$ 988.20
Totals	$ 95,926.35	$108,702.87	$ 97,555.45	$101,996.48
Cost per Million Gallons	25.93	28.15	24.60	25.17

TABLE NO. 19

RECORD OF BAD WATER COMPLAINTS

Comparisons of complaints received during Fiscal Years 1947-48 to 1950-51 with reference to the districts involved.

	1947-48	1948-49	1949-50	1950-51
University Mound	35	50	72	51
Sunset Reservoir	-	-	205	146
College Hill	24	106	27	53
Lake Honda Reser*	62	98	-	-
Lake Honda Ocean View*	35	29	-	-
Sunset Lombard	9	7	41	1
Forest Hill	8	10	7	4
Stanford Heights	65	89	106	74
Presidio Heights	11	21	16	7
Merced Manor	5	6	20	9
Totals	254	416	494	345

* Now Sunset Reservoir

TABLE NO. 20

RECORD OF NO WATER COMPLAINTS

Fiscal Years 1947-48 to 1950-51

(a) Those for which the Department was responsible:				
Choked Pipes	61	75	97	90
Service or main broken	14	25	34	27
" " " too small	122	125	126	134
Elevation too high	57	81	70	69
S/O at main or meter	9	19	15	12
District tempy S/D	1	0	1	0
Totals	264	325	343	332
Percentage	33.7%	33.0%	30.3%	33.1%
(b) Those for which the Consumers were responsible:				
House Valves Closed	58	89	89	92
" Pipe too small	189	242	367	357
False Reports	181	183	191	186
Valves out of order	63	101	114	91
House pipe broken	4	6	1	6
Bldg. too high	0	1	0	0
Overloaded service	25	38	27	36
Totals	520	660	789	768
Percentage	66.3%	67.0%	69.7%	66.9%
Total "No Water"	784	985	1,132	1,100
Large Bill Complaints	12,254	12,041	10,355	9,555

TABLE NO. 21

PIPE RECORDS
CITY DISTRIBUTION SYSTEM

Wrought Iron and Steel Pipe

Size	Total Pipe in Ground July 1, 1950	Pipe Laid 1950-51	Removed or Abandoned 1950-51	Total Pipe in Ground June 30, 1951
3/4"	12,203'	0'	0'	12,203'
1"	40,497	66	515	40,048
1¼"	3,928	0	0	3,928
1½"	173,004	0	1,088	171,916
2"	293,192	393	7,848	285,737
3"	26,614	0	0	26,614
4"	3,979	0	0	3,979
5"	804	0	0	804
6"	3,809	0	0	3,809
12"	6,555	0	0	6,555
13"	456	0	0	456
16"	25,587	0	0	25,587
20"	64,730	0	0	64,730
22"	25,309	0	0	25,309
23½"	9,087	0	0	9,087
24"	*35,243	0	0	35,243
30"	27,294	0	0	27,294
33"	2,409	0	0	2,409
36"	40,892	0	0	40,892
37½"	8,896	0	0	8,896
44"	22,974	0	0	22,974
48"	11,504	0	0	11,504
60"	26,216	0	0	26,216
Total W.I.&S	865,182'	459'	9,451'	856,190'
		Transite Pipe		
6"	5,441'	1,392'	0'	6,833'
8"	9,735	2,214	0	11,949
Total Transite	15,176'	3,606'	0	17,782'

* This figure is 6,140' less than the previous year due to a double entry in 1946 at this amount.

TABLE NO. 21 (Cont.)

CAST IRON PIPE

Size	Total Pipe in Ground July 1, 1950	Pipe Laid 1950-51	Removed or Abandoned 1950-51	Total Pipe in Ground June 30, 1951
2"	22,594'	500'	0	23,094'
3	60,450	213	90	60,573
4	496,851	2,416	1747	497,519
6	1,726,903	16,415	3579	1,739,739
8	1,511,672	9,274	1098	1,519,848
10	6,348	0	0	6,348
12	439,127	11,842	380	450,589
16	278,371	0	0	278,371
20	22,642	0	0	22,642
22	19,058	0	0	19,058
24	52,173	0	0	52,173
30	6,108	0	0	6,108
Total C.I.	4,642,297'	40,659'	6,894'	4,676,062'
Total All	5,522,655'	44,724'	16,345'	5,551,034'
Miles	1,045.957	8.470	3.095	1,051.332

TABLE NO. 22

VALVE RECORDS
CITY DISTRIBUTION SYSTEM

Gates		Service Gates		Blowoffs		Air Valves		Check Valves	
2"	120	3"	429	3/4"	9	3/4"	38	1½"	7
3"	246	4"	417	1"	45	1"	41	2"	8
4"	1,188	6"	271	1½"	286	1½"	348	3"	1
6"	3,811	8"	208	2"	852	2"	241	4"	10
8"	3,533	12"	10	3"	197	3"	5	6"	25
10"	6			4"	279	4"	1	8"	29
12"	803			6"	164	6"	13	12"	3
16"	416			8"	116	8"	243	16"	4
20"	23			12"	21				
22"	20			16"	2			Stop Cocks	
24"	57								
30"	21							5/8"	18
36"	20							3/4"	140
37½"	2							1"	202
42"	3							1½"	978
48"	1							2"	2726

TABLE NO. 23

CONTRACT DATA 1950-1951

Con-Tract No.	Title of Contract	Division	No. of Bid-ders	Contractor	Date of Award	Date of Com-pletion	% Com-pletion 6/30/51	Bid Price	Contract Cost to 6/30/51
524AC	Bay Division Pipe Line No. 3	Peninsula	10	United Conc. Pipe Corp.	11/23/49	---	83	$4,246,464.50	3,533,862.99
524B	" " " " " " "		10	Artukovich Bros.& Steve P. Rados	11/23/49	---	99	4,097,546.00	4,068,938.69
534	Lay 6" & 8" C.I. Mains in Kirkham Heights Subd.	City Dist.	6	Lowrie Paving	2/14/50	1/3 /51	100	5,139.50	5,342.13
536	Sutro Reservoir	City Dist.	10	Granite Con-struction Co.	12/18/50	---	26	1,019,935.00	271,475.35
537	Lay 6" & 8" C.I. Mains in Colby, Dwight & University	City Dist.	7	Lowrie Paving	3/13/50	7/27/50	100	5,123.70	4,837.60
538	Rehabilitation-Dumbarton bridge and pipes	Peninsula	4	J.H.Mohr Co.	3/13/50	9/2/50	100	58,777.00	59,222.00
540	Const. Retaining Wall, Curb and Fence around Potrero Heights Reser.	City Dist.	10	Lowrie Paving	2/13/51	5/23/51	100	9,430.65	10,147.19
544	Repaving-Street & Side-walk Openings 1950-51	City Dist.	1	Pacific Pave-ment Company	5/1/50	6/30/51	100	80,725.00	80,256.79
545	Lay 6" & 8" C.I. Mains in Athens St. & Valmar Ter.	City Dist.	4	F.T. Fairey	5/31/50	11/3/50	100	3,578.05	3,328.99
547	Lay 8" & 12" C.I. Mains in Laguna Honda Blvd. & Clarendon	City Dist.	5	Callahan Construction Company	1/2/51	3/7/51	100	17,349.00	16,685.56
548	Relining North Portion University Mound Tunnel	City Dist.	5	Johnson West-ern Gunite Co.	6/26/50	9/9/50	100	2,563.00	2,813.01
549	Lay 6" C.I. Mains in Apparel Hts. Extension	City Dist.	4	E. J. Treacy	7/5/50	2/16/51	100	3,302.60	1,221.28
550R	Lay 12" C.I. Main in Bayshore Industrial Development	City Dist.	4	F. T. Fairey	5/28/51	---	None	9,095.90	None

TABLE NO. 23 (Continued)

CONTRACT DATA 1950-1951

Con-Tract No.	Title of Contract	Division	No. of Bid-ders	Contractor	Date of Award	Date of Com-pletion	%Com-pletion 6/30/51	Bid Price	Contract Cost to 6/30/51
551	Lay 8" C.I. Mains in Mendosa Ave.-East of 10th. Avenue	City Dist.	2	F. T. Fairey	8/14/50	9/19/50	100	2,672.00	2,935.75
552	Lay 6" C.I. Mains in Myra Way & Summit St.	City Dist.	3	F.T.Fairey	8/7/50	10/25/50	100	9,255.75	9,195.19
553	Lay 8" C.I. Mains in Wisconsin,22nd. Sts. & Southern Hts. Avenue	City Dist.	5	S.F.W.D.	9/25/50	1/16/51	100	12,137.00	11,340.86
554	San Andres Outlet No. 1 Chlorination Plant	Peninsula	4	Wenrick & Associates	10/2/50	---	61	21,609.00	13,161.70
555	Fay 6" & 8" C.I. Mains in Jules Ave.-Grafton to Lakeview and in 25th. St. Texas to Penn. St.	City Dist.	3	H.T. Treacy	10/16/50	3/23/51	100	6,239.75	6,189.42
556	Lay 36" Steel Main in Division, 10th. & Bryant	City Dist.	3	Arthur Vall-gren	11/27/50	---	None	42,385.00	None
557	Walnut Crop at Sunol-1950	Agriculture	2	John Helzer	9/25/50	11/3/50	100	11,085.00	6,787.96
558	Lay 6" & 8" Transite and 12" C.I. Mains in Ever-glade,Middlefield and Eucalyptus Drives	City Dist.	4	F.T. Fairey	11/20/50	2/14/51	100	5,582.40	5,455.63
559	Lay 4",6" & 8" C.I. Mains in Golden Gate Heights	City Dist.	5	Harold Treacy	11/6/50	3/9/51	100	18,170.90	16,697.39
560	Lay 8" C.I. Main in Wil-lard St. between Parnassus and Belmont Aves.	City Dist.	4	S.F.W.D.	11/20/50	3/1/51	100	3,696.50	3,376.21
561	Lay 6" & 8" C.I. Mains in Sherwood Hts. Subd.	City Dist.	4	F.T. Fairey	11/6/50	4/18/51	100	11,451.75	11,180.28
562	Lay 8" C.I. Mains in W/S 19th. Ave.-So.,Gardenas	City Dist.	3	E.J.Treacy	3/26/51	5/16/51	100	5,919.20	5,706.16

TABLE NO. 23 (Cont)

CONTRACT DATA 1950-1951

Con-Tract No.	Title of Contract	Division	No. of Bid-ders	Contractor	Date of Award	Date of Com-pletion	%Com-pletion 6/30/51	Bid Price	Contract Cost to 6/30/51
563	Lay 8" C.I. Mains in Industrial St. bet. Revere & Charter Oak Aves.	City Dist.	4	F.T.Fairey	12/26/50	1/30/51	100	2,274.80	1,921.31
564	Lay 6",8" & 12" C.I. Mains in Midtown Terrace and Portola Drive	City Dist.	6	H.T.Treacy	1/22/51	---	None	21,811.00	None
565	Lay 6" & 8" C.I. Mains in Bright & Shields Sts.	City Dist.	4	F.T.Fairey	1/29/51	---	None	5,807.80	None
566	Lay 6" & 8" C.I. Mains in Lawton Heights Subd.	City Dist.	3	F.T.Fairey	1/22/51	---	None	9,405.10	None
567	Lay 6" C.I. Mains in Harkness Ave. bet. Alder and Sparta Sts.	City Dist.	3	H.T.Treacy	2/26/51	---	None	3,346.70	None
568	Lay 8" C.I. Main in 23rd. & Minnesota Sts.	City Dist.	3	H.T.Treacy	2/26/51	4/9/51	100	3,355.50	2,960.64
569	Lay 12" C.I. Main in Newhall, Palou and Keith from Topeka to Newcomb	City Dist.	7	W. Lenkeit	3/5/51	6/22/51	100	33,204.40	28,777.87
570	Lay 12" C.I. Main across Golden Gate Park from Lincoln Way & 45th. Ave. to Cabrillo St.& 46th.Ave.	City Dist.	6	H.T.Treacy	3/19/51	6/1/51	100	30,151.10	30,136.73
572	Lay 6" C.I. Main in Elmira St. bet. Helena & Shafter	City Dist.	4	F.T.Fairey	3/12/51	4/30/51	100	3,492.00	3,015.81
575	Lay 8" C.I. Main in Bayshore Blvd. between Industrial and Augusta Sts.	City Dist.	3	E.J. Treacy	5/21/51	---	75	7,797.40	5,848.05
577	Lay 6" & 8" Transite Mains Olmstead,Bowdoin & Colby	City Dist.	4	F.T. Fairey	5/28/51	---	None	8,975.00	None
581	Surfacing of Roadway at Millbrae Headquarters	Peninsula	4	Ben Blair	6/25/51	---	None	3,610.30	None

ORGANIZATION AND PERSONNEL

G. W. Pracy . . . . . General Manager and Chief Engineer

WATER PRODUCTION AND ENGINEERING

T. W. Espy . . . Senior Engineer in Charge of Water Production
L. A. McAtee . . . . . .Senior Engineer in Charge of Design
C. A. Lauenstein . Construction Engineer - Special Construction
W. A. Yount . . . . . Superintendent Alameda Division
W. R. Anderson . . . Assistant Superintendent Alameda Division
G. J. Davis. . . . . Superintendent Peninsula Division
J. E. O'Marie . . Assistant Superintendent Peninsula Division
G. E. Fanning . . . . . Photographer

CITY DISTRIBUTION

O. G. Goldman . . . . . Superintendent City Distribution
S. M. Tatarian . . . Assistant Superintendent City Distribution
A. G. Zecher . . . . . General Foreman City Pipe System
J. P. Curto . . . . . General Foreman Services and Meters
A. C. Doidge . . . . . Head Clerk
R. W. Tullis . . . . . Superintendent of Machine Shop
P. L. Sebanc . . . . . Foreman Meter Shop

WATER PURIFICATION

H. C. Medbery . . . . . Engineer of Water Purification
H. W. Tracy . . . . . Assistant Engineer Water Purification
H. L. Fruitman . . . . . Senior Water Chemist

WATER SALES

Joseph Conway . . . . . Manager, Water Sales Division
J. W. Cooper . . . . . Assistant Manager, Water Sales Division
James Hennessy . . . . . Chief Clerk Collections
Kearce Fahy . . . . . Chief Clerk Consumers' Accounts
E. R. Benninger . . . . . Head Clerk Water Sales Division
C. C. Clark . . . . . Consumers' Complaint Investigator
Francis Lennon . . . . . Head Clerk Adjusting Division
J. E. Huntoon . . . . . Head Clerk Consumers' Accounts
Chas. Hynes . . . . . Head Clerk Service and Supply
J. P. Manning . . . . . Head Clerk Closing Bills
J. A. Ragsdale . . . . . .Head Clerk Docks and Shipping
Andrew Ute . . . . . Chief Water Service Inspector

LANDS AND AGRICULTURE

H. C. Melone . . . . . Superintendent Agricultural Division
Fred Steiner . . Assistant Superintendent Agricultural Division

ACCOUNTS

E. J. White . . . . . Senior Accountant
Z. H. Taylor . . . . . Accountant
H. M. Kinsey . . . . . Cashier

RETIRED 1950-51

During the past fiscal year, the following employees were retired from service, and recognition is given to their faithful service in the organization:

Joseph C. Durhan	Office Assistant	7½ years' service
Jasper Motto	Ranger	35 years' service
John F. O'Connor	Pipe Caulker	31 years' service
Daniel P. Hegarty	Meter Repairman	23 years' service
George E. Paulsen	Foreman Gardener	5 years' service
Patrick Lynch	Serviceman	26 years' service
Jeremiah Driscoll	Pipe Caulker	39 years' service
Daniel P. Breen	Laborer	13 years' service

IN MEMORIAM

Name	Died	Length of Service
Roy E. Harmeson	July 12, 1950	10½ years
Edwin B. Barbee	July 25, 1950	13 years

SUTRO RESERVOIR - DIVISION WALL LOOKING NORTH.

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